ADDRESSES AND ORIGINAL ARTICLES

THE SURGERY OF THE POSTERIOR CRANIAL FOSSA*

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(*Concluded rom p. 504.*)

Cerebellar Tumours

IN childhood cerebellar umours are about twice as mon as those in th cerebrum. In the first le, 70 per cent. f all tumours are subtenial; between 10 and 15 ears of age, the supratenial and infratentorial are qual in number; between and 45, only about 18 per cent. are cerebellar; after the age of 55, ceebellar tumours, excluding of the acoustic nerve are practically unknown. These tumours are usualy median in situation, at y rate primarily, and bulg into the fourth ventricle above. From the milline they spread in time alward, into one or other of the cerebellar hemi- . Some are visibl on the surface, while hers lie beneath it. Th may be solid, hard, or cellular tumours, or lgely cystic.

Medulloblastoma

Medulloblastoma is th common type of mid- tumour of childhod. "This term indicates at the cells represent an embryonic stage earlier in either the spongioblast r neuroblast" (Bailey). ey are composed of very ebryonic undifferentiated ls of neuro-epithelial origi and grow with extreme idity. That the medulblastomata take their gin from an embryonic "st" is made probable the facts that their cell are of a germinal and differentiated type, normly found only in the abryo, their occurrence so rly in life, their median sition, and their occasion appearance in twins. ey seem to be about th times more common males than in females.

It is fortunate that they at ot common tumours, for they are highly maligne, and are prone to widespread dissemination in t cerebro-spinal spaces. Being median in position, t lie over the fourth ctricle, from the posterior p of the roof of which ey usually take origin, and ject into the centre of the cerebellum. The tumou ends to mould itself in o the distended aqueduct Sylvius, and by its occlusion gives rise to a well- ked internal hydro- halus. While in the great jority of cases the r of the fourth ventricle rem s free from invasion the growth, in some case n; tumour appears to be adherent to it, either by ension through the tela or by metastatic implan en. Because of its seat of origin, the tumour tably deforms and distends the ventricle, and fr ntly projects down for some distance through the a men magnum into the spinal canal.

The histories of these cases a striking resemblance to one another. The ugural symptoms are early morning attacks of pe iting without any preceding nausea ("les tr pseudo-digestifs itiaux des tumeurs de la T postérieure" of rench neurologists), which u precede the onse f any neurological signs by d months. Hen e almost invariable history nc previous ap ectomy in these cases. th ually associated with these attacks tress upon the import-

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pital discomfort, due to a commencing hydrocephalus with increased intracranial pressure. These attacks may be intermittent at first, suggesting the re-establishment from time to time of a normal circulation through the iter. The head enlarges from separation at the cranial sutures, thus compensating for the increased pressure. Sooner or later the child becomes clumsy and falls more easily, and its gait becomes uncertain. Frequently a diplopia develops, and examination of the eyes reveals a papillœdema.

The final picture is pathognomonic: a young child with an enlarged head giving a cracked-pot percussion note, a cerebellar gait with ataxia more marked in the trunk and legs than in the arms, hypotonia, and suboccipital tenderness with, perhaps, slight retraction of the head. The extremities are usually equally involved, unilateral predominance of symptoms being unusual. Many of these children show a tendency to fall backwards. Nystagmus, more frequently than in other cerebellar lesions, is very often absent. Occasionally, these children suffer from Jacksonian cerebellar fits, in which retraction of the head and arching of the back are associated with flexion and supination of the elbows and rigid extension of the legs and pointing of the toes.

Out of 131 histologically verified gliomas at the Neurological Institute of New York, nearly 13 per cent. showed calcification visible on X ray examination. Of the 25 medulloblastomas in this group, visible calcification was present in three cases (12 per cent.). Radiography will often show absorption at the posterior clinoid processes, a result common in posterior fossa lesions which cause a block ith dilatation of the third ventricle. There may even be pituitary dysfunction from pressure on the pituitary body.

Lumbar puncture should never be performed in these cases, and if ventriculography be resorted to, it should be by direct po tap and not by encephalography. But d, especially ay facilitate the dissemination of the grow er or conne bro-spinal spaces giving rise to the con lcification. nonly known as "sarcomatosis of the m The same thing may result from the giomatous of the tumours operation, the neoplas er the head g scattered malforn cerebro-spinal spac are included three types of lesior spinal canal or be the telangiectases; (2) the ven of fluid over the ngiomas; (3) the arterial or arter as implantatior venous angiomas.

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The *telangiectases* are small, mai capillary lesions, which do not give usually to any clinical symptoms. Acco ing to Virchow the floor of the fou ventricle is a favourite site for them, a in cases reported they are commonest the upper part of the pons. They are always confined to the pons, however, may be multiple in the cerebro-spinal nerv system. Whether these telangiectases are capa of developing into the other two forms is known.

The *venous angiomas* are divided by Cushing a Bailey into three anatomical varieties: the sim varices, the serpentine varices, and the racemose cirsoid type. Any of them may give rise to sympto suggestive of tumour, epilepsy being the common result of the lesion. They are usually unacco panied by papillœdema, though this has been pres

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* Based on lectures given a

se arising in the fourth ventricle grow outward backward, compressing the cerebellum and cing an internal hydrocephalus by blocking the luct of Sylvius (Fig. 7). It has been suggested a considerable part of the non-obstructive cephalus found with tumours of the choroid s may be associated with the increased epithelial ce

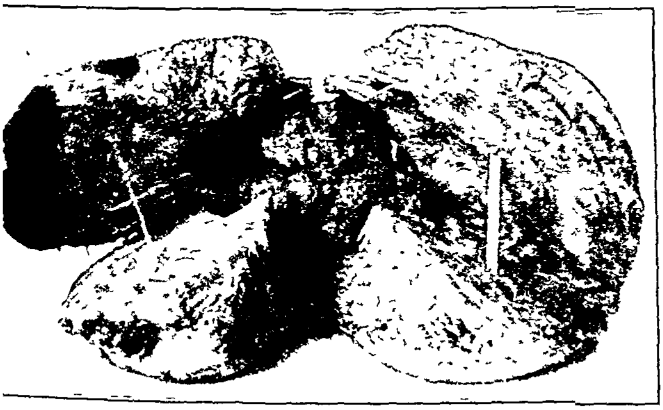
e papillomas of the fourth ventricle give rise to l symptom-complex of mid-cerebellar tumours. as t first, they give rise merely to symptoms ste with an increased intracranial tension due rnal hydrocephalus, without localising signs, often without papillœdema, or with only a slight of swelling ventriculography is especially l. The symmetrical dilatation of the lateral ricles and the filling of the third ventricle place structive lesion in the aqueduct of Sylvius. originating in the lateral recess of the fourth le, however, they may give rise to symptoms ting those of an "angle" tumour.

s been found that radiation of these tumours a marked effect in reducing their size and vascu- thus enabling them to be removed more easily ith a greater safety at the second stage of an ation.

Dermoids

the 39 intracranial dermoids reported in the ature, 15 were situated in the posterior cranial a, 13 being in the midline and 2 in the right bellar hemisphere. They are encapsulated ours, varying in size from a pea to a tangerine ge; oval, round, or hour-glass in shape; soft or cystic; with an opaque yellow colour. Like the ermoids they may have a pearly sheen. Their tents consist of sebaceous material, fat, cholesterol stals in varying amounts, and always hair (Fig. 8). presence of hair may be regarded as pathogno- onic of a dermoid or teratoid tumour. If infected e contents will consist of purulent matter.

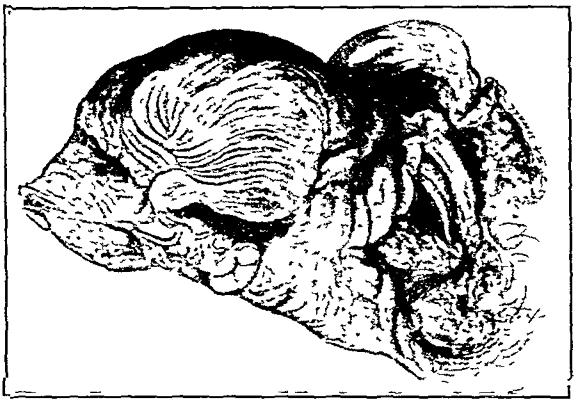
FIG. 7



pilloma of choroid plexus, fourth ventricle. (Museum, London Hospital.)

Microscopically the tissue is seen to consist of hree layers: a fibrous outer layer, a connective sue stroma, and an inner epithelial layer. In the ase of pial dermoids, the outer layer is continuous ith the pia mater, which is thickened, and is continuous with the connective tissue stroma. Blood- essels enter the tumour from the pia, and may form vascular layer between the pia and the connective issue layer. Boestrom lays stress upon the importance of the pia in the nutrition and growth of the anlage. Calcification and bony or cartilaginous spicules may occur in the connective tissue stroma, and be revealed by X ray examination.

FIG. 8



Dermoid cyst of the cerebellum. (Museum, Royal College of Surgeons of England.)

Intracranial dermoids are found at all ages, but the majority of the 39 reported cases have been in the first three decades (11, 5, 9). The sexes appear to be about equally affected. The tumour was single in 33 cases and multiple in 6. It was pial in type in 25 cases. Unlike the epidermoids the dermoids are never found in the cerebello-pontine angle. While other congenital anomalies are rare in association with the epidermoids, they are frequent with dermoids.

Unless the presence of such congenital anomalies arouses one's suspicions, it is not possible to make a pre-operative diagnosis of the presence of a dermoid from the neurological findings alone. Calcification in a tumour as shown by the X rays should lead one to keep in mind the possibility of its being a dermoid, especially if there is a bony defect over or connected with the area of the calcification.

Angiomatous Malformations

Under the head of vascular malformations are included three types of lesions: (1) the telangiectases; (2) the venous angiomas; (3) the arterial or arterio-venous angiomas.

The *telangiectases* are small, mainly capillary lesions, which do not give rise usually to any clinical symptoms. According to Virchow the floor of the fourth ventricle is a favourite site for them, and in cases reported they are commonest in the upper part of the pons. They are not always confined to the pons, however, but may be multiple in the cerebro-spinal nervous system. Whether these telangiectases are capable of developing into the other two forms is not known.

The *venous angiomas* are divided by Cushing and Bailey into three anatomical varieties: the simple varices, the serpentine varices, and the racemose or cirsoid type. Any of them may give rise to symptoms suggestive of tumour, epilepsy being the commonest result of the lesion. They are usually unaccompanied by papillœdema, though this has been present sometime after, first by symptoms of cerebellar involvement and then by visual disturbances. The long interval, which may run into months, between the onset of the paroxysmal headaches and the appearance of papillœdema is a very striking feature in these cases.

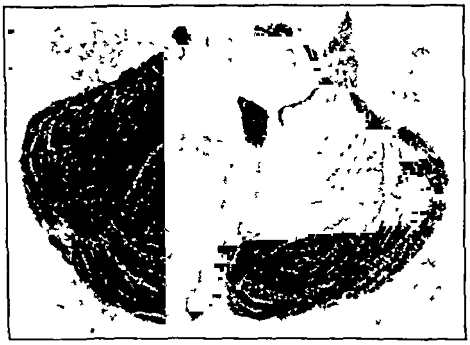
Tuberculoma

Nothing is so striking as the difference of the present-day frequency of tuberculoma, compared with that of twenty-five years ago. For instance, in Starr's statistics (published in 1908), of 300 brain tumours in children, 152 were tuberculomata (50·8 per cent.), of which 69 were in the posterior cranial fossa; while in 300 brain tumours in adults, 41 were tuberculous (13·6 per cent.), of which 19 occurred in the same region. In contrast with these figures, one finds that in the last 1000 verified brain tumours at the National Hospital, only 1 per cent. were tuberculous, and in Cushing's 1398 verified tumours, 26 were of that nature.

All statistics show the greater frequency of tuberculoma in the young—according to Gowers three-quarters of the cases are under 20 years and one-half of them under 10 years—and that their seat of election is in the posterior cranial fossa. Further, nearly all writers on the subject lay stress on the fact that the solitary tubercles of childhood show a marked predilection for the cerebellum and brain stem. This has led van Wagenen to raise the question whether the greater prevalence in young people, and especially of solitary tubercles, may not have something to do with the type of organism concerned in the process, whether bovine or human.

Occurring in the brain, tuberculomata form solid, firm, rounded masses, varying in size from that of a pea to that of a walnut, or even larger (Fig. 13). They do not infiltrate the brain tissue, but cause atrophy of it by pressure. They are mostly well-defined and shell out easily. They are often surrounded by an area of vascular engorgement, but as a rule there is no definite capsule. A capsule of fibroid tissue may be formed around them, however, if the mass ceases to grow or calcification takes place. The large solitary tuberculoma is a peculiar manifestation of tuberculosis in the brain "where the extension of the inflammatory process is allowed to proceed symmetrically, unhampered by planes of fascia or strands of connective tissue" (Boyd). They usually occur without apparent connexion with the membranes, differing in this respect from gummata. When, however, the tumour reaches the pia mat latter becomes thickened and often adhe the dura. Very occasionally they grow fr dura itself.

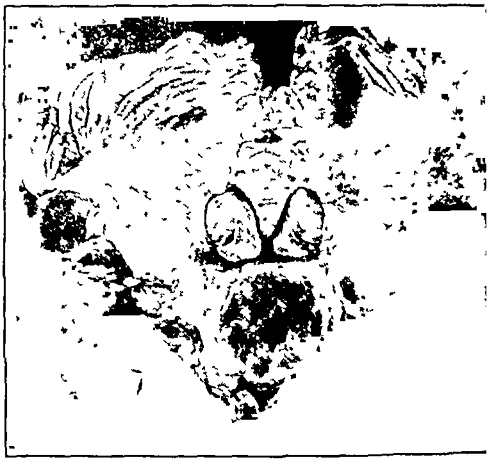
FIG. 13



Solitary tuberculoma of the cerebellum. (Museum, National Hospital.)

On section they present a uniform opaque, appearance, with areas of scattered softening periphery is softer, greyish, and translucent, a surrounding brain is usually softened. They tend to undergo suppuration. Forming t well-defined mass, a tuberculoma may be mistaken for a true tumour. Frequently t more than one present, in which case they may the same or different parts of the brain.

FIG. 14



Metastatic carcinoma of cerebellum, secondary to (Museum, National Hospital.)

Tuberculoma of the brain may occur in the a of other clinically recognisable tuberculous Suspicion as to the true nature of the tumour aroused by the presence of hereditary tenden tuberculosis, a history of exposure to inf favouring its development, a history of sympt a primary focus elsewhere in the body, or the p of local or of general evidence of tube infection.

The problem for the neurological surgeon i difficult one. The surgical outlook for u recovery following extirpation is exceedingl With a few notable exceptions, usually in adu the cases have succumbed to a tuberculous me at varying intervals following removal. The n may arise of giving relief to pressure sym especially when the tuberculoma is situated the tentorium. If so, one should be conte a wide decompression, relying upon constit treatment and heliotherapy to deal with the But the rarity with which a healed tubercul met with post mortem is an index of the r such treatment. Finally, it should always b in mind that other forms of tumour may o tuberculous subjects.

Metastatic Carcinoma

According to Boyd, in from 3 to 5 per cent. c tumours the growth is secondary. But as out by Walshe, the frequency of secondary car in the brain is difficult to estimate, occurring as as a terminal phase in visceral carcinoma, w manifestations are of an indeterminate ch and usually attributed to the effects of the

He thinks, therefore, that its incidence is
ıan that usually given. It is only in those
which early metastasis produces predominant
l symptoms in the central nervous system,
any clinical signs pointing to the presence
ary lesion, that are likely to undergo a full
ical examination. It is in these cases,
r, that the usefulness of an X ray examination,
y of the chest, is shown by revealing a clinically
mour.

ommonest seat of the primary lesion is the
lung, kidney, skin, colon, and generative
n that order.

ase with which carcinomatous cells can be
y the pulmonary veins to the left heart and
nto the general circulation accounts for the
y of metastases in carcinoma of the lung and
s. Dosquet found that of 105 cases of
ıa of the lungs, the central nervous system
lved in 31·4 per cent. Similar findings have
orded by Globus and Selinsky and by Ferguson
s.

secondary deposits are usually multiple,
in size from the macroscopic to the micro-
The visible ones are sharply defined, rounded
, loosely attached to the surrounding brain
t). When the involvement of the central
system takes on the form of a diffuse meningeal
it is spoken of as "diffuse sarcomatosis,"
atosis," or "carcinomatosis" (carcinomatosis
neninges or meningitis carcinomatosa), as the
y be. The meninges may be involved without
nvolvement of the cerebral substance, the
nt cells infiltrating the pia-arachnoid, but
nvading the brain. The ependyma of the
es may also be covered with similar small
ry growths. Hassin believes that the meninges
lved by way of the perineural lymphatics along
nial nerves, the source being metastatic cells
lymph spaces and glands of the neck. The
cells spread over the surface of the pia-arach-
d the nerve sheaths by direct extension. The
involved only to a short distance under the
by infiltration of the carcinoma cells along
ivascular spaces of vessels entering the cortex
e meninges.

rding to Morse, the commonest symptoms of
matosis of the meninges have been "headache,
ıg, pain and stiffness of the neck, and psychic
ances of various kinds followed by a lapse into
In some instances these symptoms developed
at the onset of illness, in others they closed
ne after a variety of earlier manifestations."
however, has come to the conclusion after a
of the literature that the clinical picture is
plicated and confused that the value of differ-
points in any particular case must be limited.
cords, both clinical and post mortem, of Parker's
lso illustrate the great variability in the course
ndencies of the disease and the difficulties in
sis. Thus it only emphasises the necessity of
plete general physical examination in every
f disease of the central nervous system.

Parasitic Cysts

se comprise the cysticercus cellulosæ and hydatid

ticercus *cellulosæ*.—With a greater stringency
inspection of meat and the gradual disappear-
of the *T... solium*, these cysts have become
ommon th... formerly. When they are found
brain it ...mmonly been in males between
40 and 60 years of age. They usually occur in large numbers scattered on the surface, or in the substance of the brain. They are frequently found swimming free in the ventricles or adhering to the ependyma. They are also found in the arachnoid cisterns at the base of the brain. A single parasite is more uncommon, although out of 72 cases collected by Stern, 53 had a solitary cysticercus of the fourth ventricle. When situated here they may give rise to a marked hydrocephalus by occluding the aqueduct of Sylvius.

The cysticercus in the brain is almost always formed by a capsule which encloses the parasite floating in a clear fluid. Hence they appear when found as a cystic vesicle, either floating free or fixed. Each tumour varies in size from that of a pea to a walnut. The symptoms are protean, and their inconstancy and variability has been explained by the power of movement possessed by the parasite. Convulsions and mental impairment appear to be prominent features of the disease. When occurring in the fourth ventricle it may remain latent until sudden death occurs. On the other hand, it may give rise to occipital headache, vertigo, vomiting, cerebellar ataxia, respiratory and circulatory disturbances, and to glycosuria. The intermittence of these symptoms is very characteristic, the patient being comparatively well between the attacks, and able to carry on his ordinary life. Sudden rotation of the head may bring on vertigo and vomiting, and may cause the patient to fall down. Bruns regards this symptom as pathognomonic of cysticercus in the fourth ventricle.

Except in the presence of cutaneous cysticercus, or definite evidence or possibility of infection, a positive diagnosis is unlikely, unless Brun's symptom can be elicited. Cases, however, are reported in which a diagnosis has been made by lumbar puncture and by puncture of the brain. In cases in which a diagnosis has been made of cysticercus of the fourth ventricle, and where there is no indication that the vesicles are freely mobile, puncture of the fourth ventricle, after the usual suboccipital approach, should be performed.

Hydatid cysts are rare and usually single. They have been found in the cerebellum and in the ventricles. They may run their entire course without giving rise to any symptoms, although, as a rule, symptoms of a tumour are present, and a diagnosis of such a lesion is made. The finding of the hooklets and an excess of sodium chloride in the cerebro-spinal fluid on lumbar puncture may lead to a definite diagnosis of hydatid. A local thinning of the skull, due to erosion of the bone by the echinococcus, may be revealed by X rays.

I am greatly indebted to Dr. J. G. Greenfield for his help and advice regarding the pathological specimens illustrated.

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AN AGGLUTINATION REACTION IN VARIOLA

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A METHOD of obtaining pure suspensions in saline of the elementary bodies of vaccinia (Paschen bodies) has recently been described by Ledingham (1931). Such suspensions are readily agglutinated by anti-vaccinal sera, and it has been possible with the aid of this new technique to study the development of agglutinins for elementary bodies in animals infected with the virus of vaccinia (Ledingham, 1932).

An obvious extension of this work was the investigation of variola on similar lines, in the expectation that light might thereby be thrown on many still obscure problems concerning the interrelationships of the various pock viruses. The following brief communication contains a record of certain basic data which have been obtained from a study of the development in the sera of variolous patients of agglutinins for the elementary bodies of variola.

SOURCES OF MATERIAL AND TECHNICAL METHODS EMPLOYED

A supply of virulent material (crusts and seropus) from severe cases of small-pox was obtained through the courtesy of Prof. H. W. Acton, of the School of Tropical Medicine and Hygiene, Calcutta. Similar material from mild cases of small-pox (alastrim) was obtained from patients at the Long Reach Hospital, Dartford, through the kind permission of the medical superintendent, Dr. A. F. Cameron.

Variola major.—A 1 in 100 saline suspension of the Calcutta variola scabs was inoculated by scarification of the skin of a *rhesus* monkey. Unfortunately this material proved to be of low virulence, resulting only in the production of a few small papules. These were lightly scraped on the fourth day of infection. The pulp so obtained was insufficient for the preparation of an elementary body suspension and was, therefore, used to infect a rabbit, the pulp being ground up in saline and the supernatant fluid obtained by lightly centrifuging this suspension being injected intradermally into the shaved skin of the back. Four days later each site of inoculation was marked by a red, much elevated papule, 5 to 7 mm. in diameter, with a yellow necrotic centre. The animal was then killed and the papules were excised with aseptic precautions. The tissue removed was cut up very finely with scissors and ground thoroughly in a mortar with distilled water. The resulting suspension was placed in a separating funnel with an equal volume of ether in order to extract all the fatty materials, the mixture being shaken at frequent intervals. At the end of 24 hours the lower aqueous layer was drawn off and then centrifuged for two hours at an approximate speed of 6000 revolutions per minute. The sediment so obtained was resuspended in distilled water and again subjected to rapid centrifugation for two hours. Finally the sediment was suspended in 0·25 per cent. formalin in normal saline, and centrifuged at a relatively low speed until all debris had been precipitated. Smear preparations of the supernatant fluid showed large numbers of elementary bodies with practically no other formed elements.

Variola minor.—The English variola material, being fresh, produced a more satisfactory reaction when inoculated upon the skin of a monkey, and the amount of pulp obtained was sufficient for the preparation of an elementary body suspension directly from the monkey tissue. Owing, however, to the hæmorrhagic nature of the lesions it was found necessary to repeat the process of rapid centrifugation four times before a pure suspension could be obtained. A rabbit was also inoculated intradermally with a suspension of the same monkey pulp. The reaction produced was not so marked as that obtained with the Calcutta strain of virus, but a satisfactory suspension was eventually obtained from material excised on the fourth day of infection.

Preliminary tests showed that these three elementary body suspensions, one obtained from the

Indian strain of virus, and two from the English strain, were agglutinated in characteristic fashion by a known anti-variola monkey serum. Owing possibly to its larger content of elementary bodies, clumping was more definite in the suspension obtained from the Indian strain and the agglutination titre was slightly higher than that given by the other suspensions. A microscopic agglutination technique was used in all the tests, the results being read under a two-third inch objective after incubation at room temperature (average 65° F.) for 24 and 48 hours.

AGGLUTININ PRODUCTION IN MAN

The agglutination test as above described was carried out on sera from ten cases of severe small-pox in Calcutta and on 28 sera from patients at the Long Research Hospital, Dartford, who were suffering from the mild type of small-pox (variola minor or alastrim) prevalent in England. The results are given in Tables I. and II.

TABLE I.—*Calcutta Small-pox Sera*

Case No.	Duration of infection.	Agglutinin-titre versus—			Clinical notes.
		Indian variola E.B.S.	English variola E.B.S.	Vaccinia E.B.S.	
1	19 days	N	N	N	Confluent eruption.
2	19 „	N	N	N	Mild.
3	16 „	16 + +	16 +	N	Mild.
4	16 „	16 +	8 tr.	N	Semiconfluent.
6	18 „	N	N	N	Mild.
7	11 „	N	N	N	Confluent.
	16 „	8 +	8 tr.	N	
8	7 „	N	N	N	Confluent.
	12 „	N	N	N	
9	11 „	N	N	N	Mild.
10	13 „	N	N	N	Confluent.
11	10 „	8 + +	8 tr.	N	Confluent.

Abbreviations in Tables.—N = no agglutination in dilution of 1 in 4 or higher. + + = marked agglutination. + = definite agglutination. tr. = trace of agglutination. E.B.S. = elementary body suspension. All readings were taken after 48 hours' incubation.

TABLE II.—*Dartford Small-pox Sera*

Case No.	Duration of infection.	Agglutinin-titre versus—			Case No.	Duration of infection.	Agglutinin-titre versus—		
		Indian variola E.B.S.	English variola E.B.S.	Vaccinia E.B.S.			Indian variola E.B.S.	English variola E.B.S.	Vaccinia E.B.S.
	days					days			
1	23	32 +	N.t.	N	15	12	16 +	16 +	N
2	12	64 +	„	32 +	16	12	16 +	16 +	N
3	12	8 +	„	N	17	8	16 +	4 +	N
4	19	N	„	N	18	6	32 +	8 +	N
5	13	32 +	„	N	19	15	N	N	N
6	16	4 tr.	„	32 +	20	8	N	N	N
7	23	4 tr.	„	N	21	6	N	N	N
8	7	4 tr.	„	N	22	13	4 +	4 tr.	N
9	16	16 +	„	N	23	6	8 +	4 tr.	N
10	13	16 +	„	N	24	7	8 +	4 tr.	N
11	10	4 +	„	N	25	21	32 +	8 +	N
12	10	16 +	„	N	26	8	N	N	N
13	8	8 +	„	N	27	6	N	N	N
14	17	32 +	„	N	28	8	8 +	N.t.	N

N.t. = not tested.

In the case of the Calcutta sera it must be noted that the specimens were necessarily over a month old before they could be tested. It is probable that a larger number of these would have given positive results had they been fresh. The sera from the Dartford cases were stored in the cold room soon after collection and were tested not later than three days afterwards.

From the results shown in Tables I. and II. it appears that the development of immunity to the virus of variola, both in its classical form and in the mild form prevalent in England, is accompanied by the production of agglutinins which are specific for the variola elementary body. Suspensions of the elementary bodies of vaccinia are not agglutinated by the small-pox antisera. The agglutinins for variola elementary bodies do not reach high titres, but it is possible that further refinements in technique may yield suspensions of higher agglutinability.

A further fact of considerable interest was disclosed by the results of tests carried out on the blood of a few individuals who were exposed to infection with variola, but who were immune to it by reason of previous vaccination. Samples of blood were taken from a medical officer and a nursing sister at the Long Reach Hospital and from a laboratory attendant at the Lister Institute, who was responsible for feeding the variolated monkeys used in this investigation. All three had been vaccinated several times. Agglutinins for both variola and vaccinia were found in the serum obtained from the sister and from the laboratory attendant, but none were found in the blood of the medical officer.

Some months before commencing to work with variola virus I was revaccinated and samples of my blood were taken at regular intervals in order to study the agglutinin response. No agglutinins for vaccinia were present previous to vaccination. The agglutinin-titre for the Paschen body suspension rapidly rose, reaching a maximum of 1 in 160 on the seventh day of infection. Thereafter the titre slowly fell, reaching 1 in 4 on the 52nd day after vaccination. Later I was exposed to infection both from handling the variolated monkeys and from the small-pox patients isolated at Dartford. Three weeks after *commencing the work on variola my blood gave a* positive agglutination response with the variola suspension to a titre of 1 in 64 and with the vaccinia suspension to a titre of 1 in 128.

AGGLUTININ PRODUCTION IN ANIMALS

The inoculation of either the Indian or the English strain of variola virus into monkeys resulted in the production of agglutinins for the variola elementary body but not for the vaccinia elementary body. Rabbits infected with pulp obtained from these monkeys produced, however, agglutinins for both variola and vaccinia. A more detailed description of these experiments will be withheld until the results of further work with hyperimmune sera are available.

DISCUSSION

The experiments described, though by no means exhaustive, demonstrate that agglutinins specific for the elementary body of variola are produced in response to infection of man or monkey with this virus.

The fact that vaccinia elementary bodies are not agglutinated by the sera of variolous patients furnishes a striking difference between the agglutination test and the vaccinia-variola flocculation reaction so carefully studied by Craigie and Tulloch (1931). In the latter reaction, it will be remembered, a serum from a rabbit hyperimmunised with vaccinia virus is brought in contact with an antigen which consists of a saline extract of variola crusts. Craigie (1932) has recently shown that the flocculable substance in this antigen will pass through a Seitz E.K. filter which is capable of holding back the elementary body, thus proving conclusively that the flocculation test is essentially a precipitin reaction. It would seem likely, therefore, that vaccinia and variola share some common antigen, although separate agglutinins are produced in the body in response to these two viruses.

Further work now in progress is designed to throw light on these serological affinities and their bearing on problems of active immunity among the pock viruses.

SUMMARY

1. A method is described for obtaining a pure suspension in saline of the elementary bodies of variola.

2. Variola elementary body suspensions are agglutinated by the serum of patients convalescent from either the mild or severe type of small-pox, but vaccinia elementary bodies are not agglutinated even in the highest concentrations of such sera.

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SOME FACTORS TO BE TAKEN INTO ACCOUNT IN THE TREATMENT OF HYPERTONY

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Recently C. L. G. Pratt and I have shown [1] that the administration of certain drugs for the purpose of reducing pressure in cases of hypertony results in a disturbance of the equilibrium of the different blood constituents. Patients with hypertony whose pressure was reduced artificially showed an increase of blood-urea and non-protein nitrogen; the water-excretion function was depressed, the alkali reserve of the blood diminished, and the cardiac reserve power lessened. These facts suggest that the indiscriminate use of pressure-reducing drugs is extremely undesirable. In this paper an attempt is made to study certain methods of treatment of hypertony in relation to their action on blood chemistry.

At the outset it is necessary to differentiate between methods of treating hypertony whose object is simply the reduction of pressure without regard to ætiological factors, and methods whose aim is to reduce pressure by treating the causal factor. The first must be of doubtful value, the second can do nothing but good.

The patients were kept in bed. During the first week no treatment was given. During the second week Collosol sulphur was injected, 3 c.cm. daily. During the third week six pints of water were given daily. The patients were kept on a standard diet all the time. In other cases the procedure was altered. In the first week the patient had no treatment; in the second week he was put on salt- and sugar-free diet; in the third week a diet consisting mainly of carbohydrate, and in the fourth week a pure meat diet was given.

WATER

I know of no method of reducing blood pressure which is uniformly efficacious in all cases. Indeed, considering the various ætiological factors of hypertony, no uniformity can be expected. The drinking of large quantities of water effects a striking reduction in the blood pressure in many cases. G. McLoughlin and I [2] used this method with good effect in cases of high blood pressure with a high degree of viscosity for the purpose of lowering the latter. At that particular time it was not clear to us why the action of water should have been what it was. I am now in a better position, I believe, to conjecture the reason of its beneficial action. Table I. shows that in cases under sulphur treatment, pari passu with the reduction of pressure, there was an accumulation of deleterious substances in the blood. The same phenomenon was observed when the pressure fell simply as the result of heart failure. This suggests that high pressure in cases of hypertony is needed for the purpose of maintaining a normal chemistry balance in the blood. On the other hand, cases under treatment with water, although the blood pressure was definitely reduced, showed a normal blood chemistry. The beneficial effect of large doses of water is probably due to the fact that it enables the kidney to excrete urea and allied substances more easily. In this way a normal blood chemistry balance is maintained and there is no longer a necessity for a compensatory hypertony.

TABLE I

Case.	First week (no treatment).					Second week (sulphur injections).					Third week (six pints of water).				
	Urea.*	N.P.N.*	Creatinine.*	B.P.		Urea.*	N.P.N.*	Creatinine.*	B.P.		Urea.*	N.P.N.*	Creatinine.*	B.P.	
				S.	D.				S.	D.				S.	D.
1	60	—	1·3	190	96	117	—	1·9	150	80	39	—	1·3	150	95
2	85	47	2·0	150	85	102	56	2·4	125	95	60	36	1·7	125	80
3	48	36	1·0	145	80	57	63	1·3	110	70	41	25	1·9	130	70
4	78	54	1·7	150	90	—	—	—	—	—	68	45	1·2	145	85

Chlorides.—Nil. * Mg. per 100 c.cm. B.P.=Blood pressure.

It has been contended that large quantities of water increase the strain on the heart by increasing the blood volume. It is, however, obvious that a treatment which reduces pressure and blood viscosity must also diminish the cardiac strain. Moreover, R. Mennie and I, in a yet unpublished work, have showed that there is no hydræmia after the imbibition of large quantities of fluid. Therefore there cannot be an increased blood volume under this treatment. So far as the kidney is concerned, the drinking of large quantities of fluid is all to the good. It has long been established that the work which the kidney performs in passing concentrated urine is far greater than when the urinary output is diluted.

SALT- AND SUGAR-FREE AND PROTEIN DIET

It is clear from Table II. that a salt- and sugar-free diet reduces and a protein diet increases the blood pressure. Broadly it may be stated that in hypertony the blood pressure stands in an inverse ratio to the non-protein nitrogen level in blood. It is true, as we have seen, that after the imbibition of large quantities of water both the pressure and the non-protein nitrogen (N.P.N.) tend to be lower, but in this instance the action of the water is what it is because it apparently does away with a causal factor of hypertony (viz., increased blood viscosity). The blood-urea is somewhat increased under the salt- and sugar-free diet and somewhat diminished under meat diet, although urea is an end-product of protein. It is possible that a low blood-urea after meat may be explained by the diuretic properties of this substance. The increase of blood-urea after a salt-free diet is by no means so pronounced and constant as it is under conditions where pressure-reducing drugs are given.

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[1] The Lancet, 1931, ii., 629.
[2] Quart. Jour. Med., 1930, xxiii.

It is possible the increase has something to do with the maintenance of the normal osmotic pressure, which is lowered by a salt-free diet.

TABLE II

Case.	First week (no treatment).				Second week (salt- and sugar-free diet).			
	Urea.*	Blood chlorides.	Uric acid.*	Blood pressure.	Urea.*	Blood chlorides.	Uric acid.*	Blood pressure.
				S. D.				S. D.
1	51	375	—	215 150	44	285	—	235 130
2	46	412	3·6	200 104	66	390	—	170 98
3	42	336	4·5	230 124	57	420	4·4	— —
4	36	372	—	255 125	32	310	—	250 150

	Third week (diet consisting mainly of carbohydrates).				Fourth week (meat diet).			
				S. D.				S. D.
1	49	510	—	250 130	30	452	—	257 135
2	44	450	4·8	200 90	36	—	—	200 100
3	41	575	4·7	190 105	32	496	5·5	225 112
4	32	410	—	270 174	40	410	—	285 145

* Mg. per 100 c.cm.

After venesection there was a pronounced reduction of blood pressure, and the blood biochemistry remained normal, but, as has been the experience of many others, the beneficial effect of this procedure is only transitory. Within less than a week the blood pressure reached its usual level.

Table III. is interesting because it shows that the urea-concentration test so much in vogue is not always quite reliable. Urea was given to a patient before the blood pressure was raised and also when the pressure was relatively low and the blood-urea high. The effect of the same quantity of urea was different in the same patient under these two conditions. Apparently, when the blood-urea is already high, an additional dose of urea may exert a pronounced diuretic effect which may result in a lowering of the blood-urea level. This was the reason why the urea-concentration test has given no consistent results in this investigation.

TABLE III.—*Blood-urea*
Mg. per 100 c.cm.

Case.	Before blood pressure was reduced.		After blood pressure was reduced.	
	Administration of urea.		Administration of urea.	
	Before.	After.	Before.	After.
1 ..	48	75	55	67
2 ..	85	102	102	78
3 ..	34	65	41	44
4 ..	60	128	63	105

The conclusion is that it is undesirable to employ drugs for the purpose of reducing pressure. On the other hand, the imbibition of large quantities of water ought to be encouraged. The diet should be of low protein content, and excessive amounts of salt should be avoided.

I should like to acknowledge my indebtedness in regard to this work to Mr. G. Williamson.

FURTHER STUDIES ON THE ANTERIOR PITUITARY-LIKE HORMONE

WITH SPECIAL REFERENCE TO IRREGULAR UTERINE BLEEDING *

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A PRELIMINARY report on the treatment of irregular uterine hæmorrhage by hypodermic injection of the anterior pituitary-like hormone extracted from human placentæ was read before the Winnipeg meeting of the British Medical Association in August, 1930 (Campbell and Collip, 1930). The results were so promising that a series of 84 cases has been more continuously and completely studied.

The alleged association of certain physical characteristics with endocrine disorders was a matter of special interest in this study. In each case, therefore, a detailed general history, as also an exhaustive menstrual history was always obtained as a preliminary, while the complete physical examination had special reference to possible endocrine relations. It is interesting to note that in the 60 per cent. of our cases which were examined by X rays to ascertain any possible gross abnormality in the conformation of the sella turcica, no bony changes were found.

Determination of blood pressure, blood Wassermann reaction, and urinalysis were carried out as a routine. The basal metabolic rate in all instances was found to lie within normal limits. Particular emphasis was, of course, laid on the pelvic examination to determine the position, shape, and size of the uterus, and the state of the adnexa; all cases with endocervicitis or birth trauma which in themselves would lead to such pelvic congestion as to predispose to, or cause menorrhagia or metrorrhagia, were excluded. Post-menopausal metrorrhagia was also omitted from the study, on account of its frequent association with carcinoma of the fundus or malignant changes in the adnexa. Nor should one leave out of consideration the possible existence of small myomata in the fundus, for, as Beckwith Whitehouse has pointed out, small mural fibroids may so interfere with the contraction of the uterus as to cause excessive menstrual flow. Moreover, since the surfaces of the endometrium are normally in constant apposition, the presence of any submucosal myoma or other irregularity in the surface, allows of and predisposes to local hypertrophy or polyp formation; myometrial changes in persistent uterine bleeding have been described by Schroeder, Whitehouse, Young, and Lockyer. Too much stress cannot be laid on the need of careful exploration of the cavity of the uterus in order to determine the character of the surface of the wall, as well as to obtain samples of endometrium for histological study.

TYPES OF HÆMORRHAGE

In an earlier communication I stated that cases of excessive uterine bleeding may be grouped into several categories according to their menstrual history. (Table I. and Fig. 1.)

The last group (G) may be further subdivided into four categories, according to the mode of development of the continued bleeding which may arise.

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* Read before the Section of Physiology and Biochemistry of the British Medical Association on July 28th.

(*a*) By confluence of regular cycles of varying length of interval with unduly prolonged duration of the flow.

(*b*) By confluence of irregular periods of metrostaxis.

(*c*) Spontaneously, either after a normal menstrual cycle or more commonly after a period of amenorrhœa.

(*d*) As an outcome of puberty.

TABLE I.—*Varieties of Abnormal Uterine Hæmorrhage*

—	Length of cycle.	Amplitude of flow.	Duration of flow.
A	Normal.	Excessive.	Normal.
B	,,	,,	Prolonged.
C	,,	,,	Normal, superimposed on constant bleeding background.
D	Short (19–24).	Normal or excessive.	Normal or prolonged.
E	,, (14 days).	,,	Irregular.
F	A cyclic intermittent bleeding.	Irregular.	,,
G	Continuous excessive hæmorrhages.		

Excessive bleeding may appear at any time from the menarche to the menopause. In cases of metrorrhagia, the size of the uterus may be within normal limits, but more frequently it is symmetrically enlarged, and its consistency may wrongly suggest subinvolution or a sessile fibromyoma. When bleeding commences at puberty the uterus is not necessarily enlarged, but its shape becomes similar to that of the parous woman's uterus, in that the corpora-cervical angle is less acute. Even in young patients suffering from excessive uterine bleeding it is found that the cervix is slightly patent and easily admits a small sound. In the parous woman the patency is more pronounced.

I should like to emphasise here that the endometrium in menorrhagia and metrorrhagia gives little information regarding the character and severity of uterine bleeding; nevertheless, it is to some extent true that the changes produced in the mucous membrane may be taken as an index of ovarian function in cases otherwise apparently normal. It is clear that where cycles exist samples of the endometrium must be obtained at the same part of the epoch in parallel cases if any comparison is to be made. If the cycles are masked by continuous hæmorrhage, the interpretation becomes more difficult. Moreover, Evans has pointed out, in a critical review of the work of Schroeder, that premenstrual changes in the endometrium occur in some cases immediately after the cessation of the period, and that exactly similar changes may occur very late in the interval, so that the value of comparisons of one case with another, even if samples were obtained at the same time in relation to the apparent menstrual cycle, appears to be hazardous.

It has been shown by Schroeder and by W. Shaw that in cases of metropathia hæmorrhagica the ovaries contain no fresh corpora lutea, but a follicle with cystic changes is the rule (Fig. 2). Although Novak has not confirmed this finding, it is generally considered that the endometrial change is associated with subnormal ovarian function. However, the complete removal of the ovaries does not lead to any similar condition, and J. B. Collip (1932) has found that the fluid from such follicular cysts in cases of this type of irregular uterine bleeding may contain up to 25 rat units of œstrin per c.cm. This suggests that there is a secretion of œstrin from the ovaries which is disproportionately great, whether absolutely or relatively to the reduced activity of luteal tissue which may be inferred from the appearance of the ovaries. With regard to the suggestion made by Shaw, that the ovary produces some abnormal toxic substance, it may be stated that similar suggestions have been made from time to time for other organs of internal secretion, but in every case the view that disturbances are due to excessive or deficient formation of the normal hormone has prevailed.

EFFECT OF THE HORMONE ON BLEEDING

Animal experiments show that excessive doses of œstrin not only affect the production of monophasic cycles, but in continued administration may eliminate the cycles. Excess œstrin affects the entire human organism. As regards the uterus the effect is not limited to the endometrium, but affects the myometrium as well, and herein lies an important consideration. The continued administration of moderate doses of the anterior pituitary-like hormone (A.P.L.) in immature female rats leads to the precocious appearance of normal œstral cycles (Collip, Thomson, McPhail, and Williamson), while the ovaries rapidly attain the size and appearance of those of normal adults. There is, therefore, reason to suppose that this substance might directly, or through the anterior pituitary, correct the changes observed in the ovaries in metropathia hæmorrhagica, and lead to the appearance of normal balanced ovarian function and the recovery of normal uterine structure and function. This expectation was realised in many cases of varied types.

TABLE II.—*Response to Treatment*

Clinical type when examined.	—	Menstrual characteristics.		Duration of symptoms. Years.	D and E within 6 months.	D and E prior to 6 months.	Radium prior to 1 year.	Subsequent history.				Metrorrhagia.	Intermittent or temporary amenorrhœa. Three months.	Menopause.	Unimproved.
		Previous to onset of present illness.						Bleeding.		Cycles.					
		26–28 days.	19–24 days.					Amplitude. Normal.	Duration. Normal.	26–28 days.	19–24 days. Polymenorrhœa.				
A	11	11	—	½–1	1	1	1	11	11	11	—	—	1	—	0
B	14	14	—	1–2	4	1	1	14	12	12	—	—	—	—	2N
C	6	6	—	½–1	2	1	—	5	5	5	—	1M	—	—	1M
D	18	5	13	1–7	5	1	—	16	16	10	7	—	2	1	1H
E	8Q	3	3	½–1	2	—	1	8	8	5	3	—	—	—	2P
F	7R	5	2	–½	—	—	—	7	7	6	1	—	—	—	0
G	20L	15	—	1–11	7	6	5	15	15	10	—	5T	5S	1	5T

Legend.—(L) Of these, bleeding dated from puberty in five cases. (M) This case recently curetted, non-response probably due to endometritis (infected). (N) Small submucous fibroids ½ to 1 cm. in diameter. (H) Aged 51. Uterus explored and found normal. Endometrium showed moderate cystic hyperplasia with œdema of the stroma. (P) Two returned to 14-day cycles. (Q) One of these, condition dates from puberty. (R) Entire group of recent origin. (S) Existing since puberty. (T) One chronic nephritis, one due to pelvic inflammatory disease, two showed after hysterectomy, uterine musculature hyperplastic and in places atrophied, ovaries large, follicular cysts with no potential Graafian follicles, no evidence of recent corpora lutea. One case unexplained.

Preparations of different strengths were used, but the dosage was so adjusted that the patient received at least 40 day-rat units per injection. Our best results were obtained by an injection every day for seven days, then every second day until the patient had passed through two menstrual cycles. When the menstrual flow became of normal duration and proportion treatment was discontinued. A high percentage of cases in all groups responded as shown in Table II. In all groups there were some instances of recurrences of menorrhagia or metrorrhagia, but upon reinstitution of the therapy the cases responded with comparatively few injections. Group D, however, proved disappointingly refractory.

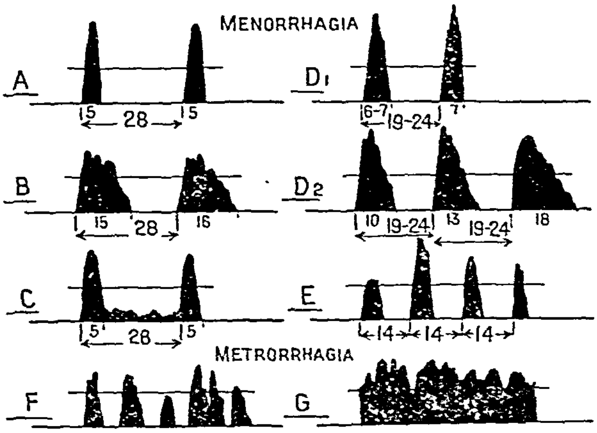
In typical cases of so-called metropathia hæmorrhagica, such as those shown in Fig. 3 appended, the institution of A.P.L. treatment did not cause any immediate cessation of bleeding; indeed, while hæmorrhage commonly became less copious, there was no striking change for eight to ten days, and then the bleeding became very profuse, usually worse in the morning, with sharp "spurts" throughout the day. This exacerbation, however, gradually subsided, and the bleeding practically disappeared except for slight metrostaxis, for from four to five days' duration, or lasting into the next cycle. The majority of cases, when treatment was continued, manifested a menstrual period on the twenty-eighth day after the first exacerbation (which is regarded as an epoch superimposed on the background of more or less continuous hæmorrhage), and at this period the hæmorrhage was usually greater than a normal flow in duration and amount, clots and large mucosal fragments were passed, accompanied by considerable pain. Usually the treatment was discontinued at this point; if, however, the uterus remained large, and no pain was experienced, the treatment was continued; it was assumed with some reason that the bleeding of metropathia, which is characteristically painless, was not overcome and that the myometrium had not returned to normal

(Fig. 4, Case A). It may be that several menstrual cycles must elapse before the endometrial overgrowths are completely shed, since Whitehouse has shown that the uterine mucosa is not completely nor uniformly shed, even in normal menstruation. On the other hand, in cases which were curetted prior to the institution of therapy the result was considerably hastened (Fig. 4, Case B). Once cycles of normal interval and proportion were established, they continued normally thenceforward, and in all cases which responded the uterus too returned to normal proportions. This maintenance of normal rhythm has been followed in some cases for over two years. There were, of course, exceptions to this typical history—for example, in women near the menopause, where the cessation of hæmorrhage is followed by amenorrhœa. It is of interest to note that the vasomotor disturbances of the menopausal syndrome did not appear in such cases.

In patients with continuous uterine bleeding dating from puberty the gross response was satisfactory, no matter how long the hæmorrhage had continued, though after one or two cycles the normal rhythm was not perfectly established, being punctuated with periods of amenorrhœa lasting up to three months. Only very occasionally did the symptoms recur. It is worth noting that over 10 per cent. of the cases in this entire series had at some time or another previously been treated with radium or X rays, with only temporary improvement.

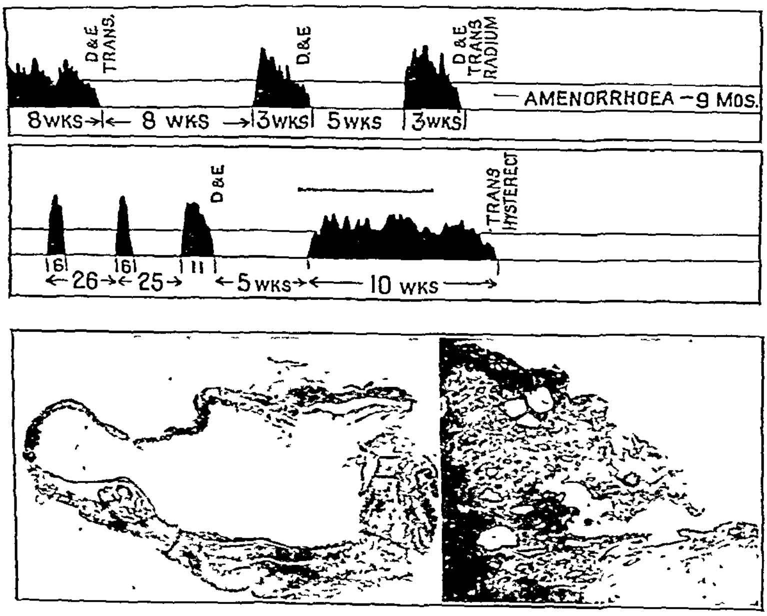
In cases of post-partum metrostaxis the results were particularly good; there were ten cases treated, and all responded.

FIG. 1



This represents the eight different menstrual types into which the cases have been arbitrarily divided. D1 and D2, however, may be found at different times in the same individual. The graph indicates the quantity and duration of the bleeding. The upper horizontal line represents the normal blood loss, whilst the length of the interval in days is shown by the figures below.

FIG. 2



Aged 35, married, 3-para. Some 20 months are represented graphically on the chart. Left ovarian cyst size of hen's egg. Uterus slightly enlarged. The endometrium absent in the lower portion of the uterus. On section, the uterine musculature showed definite hyperplastic changes. In the fundus the endometrium slightly polypoid, and microscopically showed cystic hyperplasia. On serial section, left ovary atrophied and cystic; right ovary contained corpora lutea, but not of recent development. No maturing Graafian follicles to be found. The greater portion of the ovary replaced by scar tissue, showing almost complete replacement of ovarian tissue by cyst (left ×¾) also corpus luteum not of recent development. Section of endometrium (right ×5) shows cystic hyperplasia.

Excessive menstruation following abortion responded similarly.

When pelvic inflammatory disease was the cause of metrorrhagia or menorrhagia the symptoms were aggravated by this method of treatment.

In cases of polymenorrhœa with flow of normal character, but recurring at irregular short intervals, it was sometimes possible to increase these intervals by three or four days; the previous condition, however, recurred when treatment was discontinued.

OTHER USES OF THE HORMONE

May I again emphasise the need of an outlook *that extends beyond the* endometrium and the study of mere local changes? The entire human organism is influenced by ovarian function. While the endometrium is a tissue easily accessible to study, the pattern of which alters from day to day, there are changes of a general biological character which may give rise to clinical symptoms, though they are not evident in the endometrial architecture.

In this connexion clinical trial of A.P.L. extract was extended to other conditions. Thirty cases were treated for menopausal symptoms and 24 responded. The improvement was marked even when a considerable time had elapsed since the last menstruation. In six of these cases in which periods had ceased for various lengths of time up to one year, menstruation reappeared in from eight to ten days.

In cases with mastalgia, or so-called chronic mastitis, particularly those associated with abnormal menstrual cycles, not only was the pain relieved, but the small pea-like nodules in the breast disappeared. Let me add here that the normal mammary gland was never affected even in prolonged administration of A.P.L., nor was the post-partum breast in any way altered.

FIG. 4

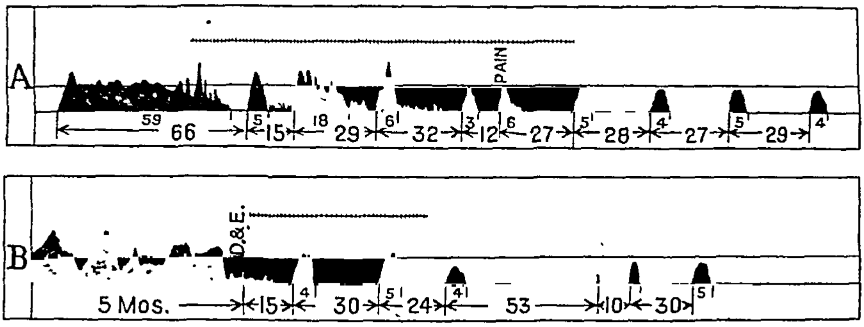


Chart showing history of two cases treated with A.P.L. The horizontal cross-hatched line indicates the period through which treatment was administered. A, was curetted four years before the institution of therapy. *Curettings at that time showed a hyperplastic endometrium.* B, was mildly curetted immediately before the institution of therapy. Microscopical examination showed cystic hyperplasia of the endometrium with some œdema of the stroma. (Fig. 3 c.)

A form of urticaria associated with subnormal ovarian function and refractory to all other forms of medication disappeared with the administration of this hormone. Vomiting of early pregnancy was not improved, though it is worthy of note that in none of the cases treated was there any tendency to

FIGS. 3 A B C

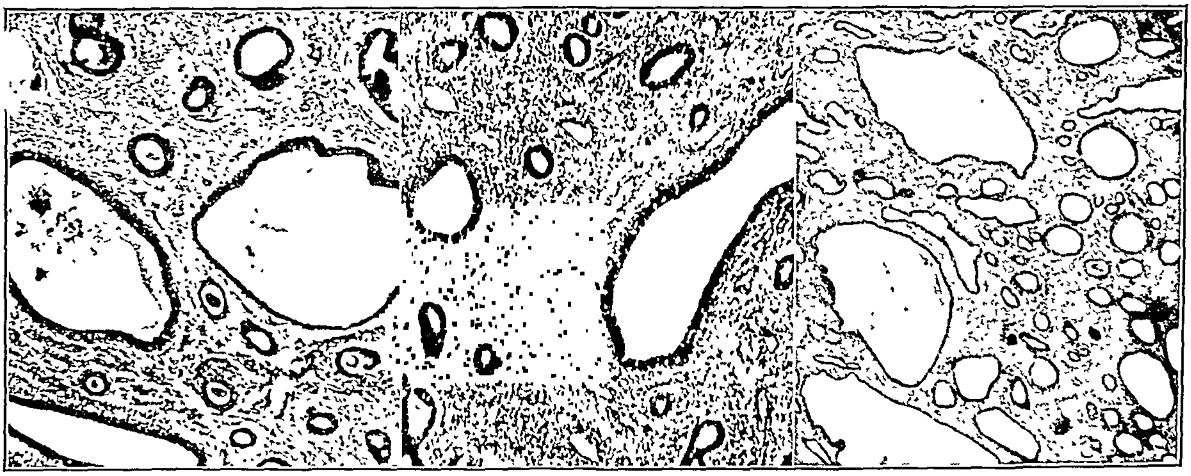


FIG. 3 A.—Aged 21, single, puberty irregular. Metrorrhagia lasting for several months. During the past seven years was curetted three Bleeding profusely for four months prior to coming under observation. Uterus slightly enlarged, very lepth. Contour of cavity normal but hard. Photomicrograph (×40) shows marked glandular and cystic hyperplasia. A.P.L. administered for six weeks. Normal cycles followed after an initial lapse of menstruation for three months.

B.—Aged 35, 2-para. Menstrual history characteristically normal until three years ago, when periods became more profuse. For two months, metrorrhagia in addition to menorrhagia. Section (×40) shows polypoid hyperplasia with cystic glands. Stroma œdematous. After two months' treatment menstruated normally and cyclicly. One year later symptoms recurred, but with six injections of A.P.L. intermenstrual bleeding ceased and cycles became of normal proportions.

C.—Aged 43, 4-para. Menstrual history characteristically normal. Metrorrhagia for past six months. Uterus enlarged, firm, but normal in shape. Parametrium and adnexa apparently normal. Cervix slightly patent, depth of cavity 4½ in. Walls firm, contours normal. Gently curetted. Endometrical stroma (×20) shows irregular areas of œdema. Hæmorrhagic areas throughout; glands greatly dilated, containing blood and hyaline secretion; epithelium of columnar type; many cells vacuolated. No areas of infiltration. Treated for two months. Subsequent history represented in Fig. 4 B. Uterus returned to normal proportions.

abortion. Cases of sterility, in most instances associated with polymenorrhœa, did not become pregnant, though two cases suffering from metrorrhagia became pregnant while being treated, and one other with a similar condition became pregnant immediately after cycles were established.

Dysmenorrhœa was intensified. It has previously been pointed out that in the treatment of menorrhagia and metrorrhagia the appearance of pain frequently marked the beginning of improvement. Intermenstrual pain (Mittelschmerz) became more severe under treatment.

In cases with normal cycles no change either in the amount of hæmorrhage or the duration of the interval was observed, even when the injections were continued for months.

A typical menstrual period occurred in ten cases of secondary amenorrhœa in from 10 to 14 days after therapy was instituted. No success was obtained in similarly treating primary amenorrhœa. The preparation of anterior pituitary-like hormone used by us did not cause any local symptoms or alteration in blood pressure levels or give rise to systemic reaction.

It is generally held that the corpus luteum is essential for normal menstrual cycles, but I believe that this dogma must be modified, as pointed out in a previous communication (Campbell and Collip, 1930). Moreover, Corner and Hartman have shown that the corpora lutea are not necessarily present in ovaries showing cyclic activity as manifested by menstruation. Ovarian function in the human may, therefore, be largely appraised by the regularity, amplitude, and duration of the menstrual epochs as well as by general well-being.

IMPRESSIONS

(1) There are several types of irregular uterine bleeding which may be distinguished by their menstrual histories. In selecting cases for treatment, correct diagnosis is essential; the organs in the pelvis must be palpably normal, and the presence of neoplasms of the uterus must be excluded. (2) Menorrhagia and metrorrhagia due to inflammatory diseases are aggravated. (3) Metropathia hæmorrhagica responds particularly well. Pain is taken to signify that the musculature has returned to normal tone, and that the hyperplastic endometrium is being rapidly expelled. (4) Response is not so consistent in metrorrhagia of puberty, and treatment is followed by periods of amenorrhœa. (5) Menopausal symptoms are alleviated. (6) Mastalgia, if accompanied by disturbed menstrual cycles, frequently subsides. (7) No permanent improvement is noted in simple polymenorrhœa. The symptoms of dysmenorrhœa are intensified. (8) There is no effect in pregnancy, and no effect upon normal menstrual cycles as regards interval, amplitude, or duration; no local or constitutional symptoms are observed. (9) It is considered that the effect of the anterior pituitary-like hormone is to cause the ovary to resume a complete and balanced endocrine activity, in place of one that is unbalanced and incomplete.

The extract used in these studies was prepared in the Bio-Chemical Laboratory of McGill University by Prof. J. B. Collip. The method of preparation and physiological properties of the anterior pituitary-like hormone have been published previously (ref. 3).

I wish to thank the staffs of the Royal Victoria Hospital and the Montreal General Hospital for their kind coöperation.

(*Continued at foot of next column.*)

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CLINICAL OBSERVATIONS ON MALARIA TREATED WITH TEBETREN

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AN account by Dr. R. Green in THE LANCET of April 16th (p. 826) of the successful treatment of malaria with Atebrin, a new synthetic drug consisting of an acridine compound, has stimulated me to write my clinical observations on the treatment of malaria with a new preparation, known as Tebetren, which combines the virtues of quinine and an acridine dye, and does not discolour the patients during treatment. Its composition is methyl-hydrocupreine-methyl-acridine-dehydrocholate, and it is unnecessary to add any other preparation as the quinine is combined with the dye. To render the preparation non-toxic the compound is united with a bile-salt. Tebetren was supplied to me for trial by the Natal Health Department in 1930 in tablets of about grs. 3 each, pale yellow in colour and with a bitter taste. When crushed the tablet is slightly soluble in cold water, more so in alcohol, and insoluble in ether. The colour of the solution in water and alcohol is greenish-yellow.

At my suggestion the manufacturers supplied me with the preparation in ampoule form (2·1 c.cm. in each). Intradermally the preparation is painful and causes sloughing of the skin at the site of the injection, with inflammatory reaction around. Sloughing is not however deep-seated. Intramuscularly into the gluteus maximus little or no pain was complained of, nor was there any local reaction at the site of injection. Routine was oral treatment; in cerebral cases one ampoule was injected intramuscularly every four hours during the day until the patient was conscious, and then oral administration continued. I have not administered the preparation subcutaneously or intravenously, although it is claimed that subcutaneous injection with massage will not cause any local reaction. It is claimed to act more readily on schizonts than gametes. It stimulates the phagocytic power of the blood for a much longer period than quinine and exerts a destructive effect on any stage of development of the malarial parasite.

To date some 80 European adults and about 20 children whose ages varied from 2 to 12 years have been treated: the course for adults being 2 tablets every 4 hours, if possible including the night, for 30 uninterrupted doses, for children ¼ to 1 tablet according to age every 4 hours for 30 doses. Four courses (120 doses) are given and as tebetren is cumulative in action a rest of 3–5 days is necessary between each.

European patients (14 in number) so treated who gauzed their living quarters to safeguard themselves from reinfection have not relapsed for a period of over 18 months. Infections that were resistant to quinine treatment reacted to tebetren and gave three negative monthly smears after the fourth course.

The original test cases in 1930 were an indiscriminate selection of an Asiatic (Indian) and 14 natives (Basuto, Xosas, Zulus), all proved by slides to be suffering from subtertian and benign tertian malaria. Unfortunately these cases being of the mobile population were discharged from hospital after a negative phase had been established by uninterrupted 4-hourly dosage. One Zulu however was kept under observation for a period of six months. In his case, a negative phase having been established, I was unable to precipitate an attack of malaria by adrenaline or douching with cold water after severe work.

Patients complained of what I interpret to be mild toxic effects—viz., (1) a feeling that the skull was too small for the brain; (2) a lightness of head with or without slight deafness; (3) a singing in the ears. These complaints were made during the first course and got less and less in subsequent courses. Others complained of feeling bad, but could not definitely explain. This type of complaint was met by a large drink of tea or water at the time of dosage, or by alkalising the patient with copious drinks of bicarbonate of soda in water. I quote this last simply as a possible toxic effect, for in many cases it was, I believe, due to malaria.

In the 4-hourly slide controlled cases the results were as follows: In benign tertian infection the average minimum time taken for parasites to disappear from the peripheral blood was 48 hours, in subtertian infection 36 hours. With quinine bihydrochloride grs. 30 per diem the time was: 110 hours for benign tertian, 72 hours for subtertian. I have not treated a case of quartan infection which is a rarity in this area. In neither benign nor subtertian infections have sexual forms of parasites been found. The febrile condition was on the average controlled in both types of infection in 48 hours.

Symptoms of malaria—viz., large spleen, with or without tenderness, aching body, vomiting, headache, &c.—responded readily to treatment, especially the distressing vomiting. Pregnancies varying from five months onwards were uninfluenced by the treatment. One case of cerebral malaria in a native female about six months pregnant was treated energetically with intramuscular injections of tebetren, four hourly during the day, and regained consciousness after a period of four days and nights, when oral administration was continued. She gave a negative slide after the fourth course, and is at the moment going on well with pregnancy uninterrupted.

CONCLUSIONS

1. As compared with quinine the action of tebetren is more rapid.
2. It possesses a lethal action on benign and subtertian parasites and may inhibit the formation of gametes.
3. Patients were more rapidly in a state of recuperative well-being than with other forms of treatment I have used.
4. Little or no toxic effects occurred other than those stated above, and patients (Europeans) who relapsed after three negative tests, and who may have been reinfected at home, readily presented themselves for further treatment.
5. Satisfactory results were obtained in cases resistant to quinine.

I am indebted to Dr. Park Ross, assistant medical officer of health for the Union of Natal, for supplying me with samples of the preparation, and to Dr. B. Sampson, Government pathologist, for examining a number of blood slides.

CHOLECYSTOGRAPHY *

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No branch of radiology requires more careful attention to technique and interpretation than that of the examination of the gall-bladder, and the accuracy of the radiologist's reports varies directly with his appreciation and care of detail. The best results will be obtained when he personally carries through the whole procedure. His report is the radiographic evidence on which the clinician should rely, and it should be so worded as to convey an opinion as to the nature of the pathological lesion revealed. A mere description of the appearances presupposes that the clinician can interpret the significance of shadows which he would probably not notice unless the radiologist pointed them out to him. The significance of radiographic appearances is best appreciated by those who make it their sole study; the subject is too vast to permit of excellence in any other specialist subject. Even the regional specialist who attempts to interpret radiograms is usually ignorant of the fundamental radiographic technique and the changes that may be due to alteration of that technique; he may also fail to recognise the appearances familiar to the radiologist in other parts of the body, the knowledge of which may be all-important in diagnosis.

I believe it to be the duty of all radiologists to issue a report with every radiogram sent to the clinician, and it is on the value of his reports that his reputation should be built up. Wise clinicians realise this, and must be familiar with many instances of error due to the folly of inexperienced interpretation.

PREPARATION OF THE PATIENT

The gall-bladder is in close relation to the hepatic flexure and the first part of the transverse colon, the stomach and duodenum, and its shadow may be obscured by opaque or gaseous contents of these organs. If bismuth or any other opaque material has been taken by the patient, a mild aperient should be given two days before the X ray examination, and the patient kept on a light diet during this period. Drastic purgation is likely to result in distention of the bowel by gas which will obscure the gall-bladder shadows. If the patient is constipated a simple enema may be given, followed by a saline enema to wash out the contents of the bowel, taking care that no air is introduced.

PRELIMINARY RADIOGRAPHY

It is essential that before any opaque material is introduced into any organ for radiographic purposes

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* Based on a paper read before the Section of Radiology of the Royal Society of Medicine.

a preliminary radiogram be taken and carefully studied for any trace of abnormality. Failure to do so may result in faulty diagnosis and the missing of the essential lesion, owing to the obscurity produced by the opaque medium used. In a previous paper[1] I have given a list of the lesions I had discovered by preliminary radiographic examination, and often these were the only pathological signs discovered, and in many cases the cause of the symptoms. On the one hand, the clinical signs and symptoms of gall-bladder disease may be present when this organ is functioning normally, while, on the other hand, gall-bladder disease may be accompanied by signs and symptoms which do not suggest that there is anything wrong with it. In some cases of obscure abdominal disease the inclusion of a preliminary radiogram of the bones of the pelvis may throw light on the pathology of the condition.

The preliminary radiogram of the gall-bladder area I take with the patient lying prone on the Potter-Bucky diaphragm, with the arms folded above the head and the head resting on the left arm, looking towards the right, so that there is a slight rotation of the body to the right. The X ray tube is centred 30 inches above the Potter-Bucky diaphragm, over a point 2 inches to the right of the spine over the last rib, and an exposure of ½–2 seconds, varying with the thickness of the patient, using 100 m.a. (milliamperes) of current. The slight obliquity of the patient will throw the shadows of the gall-bladder away from those of the spine. Well-defined gall-stone shadows and a good shadow of a dye-filled gall-bladder may be entirely missed, because they are superimposed on the shadows of the spinal column. It is obvious, therefore, that if thin gall-stone shadows are to be seen these must be projected away from the shadows of the spine.

The shadows of well-defined faceted calcium-containing gall-stones leave little to the imagination in interpretation. Examples of such radiograms are now to be found in almost every X ray department, though a few years ago only a select few radiologists possessed them and knew their demonstration by X rays to be possible. The more common radiographic appearance—though to the trained eye it is as significant—is the ill-defined, thin, flaky shadow which I believe can be demonstrated in about 30 per cent. of cases in which gall-stones are present. These shadows may be obliterated by the slight movement of the gall-bladder due to body movement or visceral peristalsis, yet there may be little on the radiogram to suggest movement. They may only be seen on radiograms taken with a fraction-of-a-second exposure, and can be best demonstrated by using a cone without the Potter-Bucky diaphragm. These thin gall-bladder shadows may also be obliterated if dye enters the gall-bladder, and a normal gall-bladder may be reported, the stones being of the density of the dye concentration.

Occasionally one finds that the wall of the gall-bladder is calcified, while sometimes it is full of opaque sand which has a radiographic appearance like that of a dye-filled gall-bladder. This has led to the faulty interpretation of the cholecystogram in cases where no preliminary radiogram had been made. Where the stone is solitary, difficulty of interpretation may be experienced, but subsequent radiograms with alteration of position, and radiograms in different positions after the injection of the dye, will clear up most of the difficulties. The demonstration of gall-stone shadows on the radiogram does not necessarily account for the cause of the patient's illness, and if the complaint suggests any other lesion, this should be searched for in addition. I recorded[2] the discovery of a small carcinoma of the transverse colon in such a patient over four years ago, and since its removal she has had no further symptoms.

INJECTION AND ORAL ADMINISTRATION

Those of us who have been keen on the radiology of the gall-bladder have watched the gradual but marked improvement in the chemicals used in cholecystography. When I read my first paper on cholecystography in 1925 we were injecting sodium tetrabromphenolphthalein intravenously. This dye was toxic for a relatively large number of patients, and the gall-bladder shadow, compared with those now obtained, was relatively faint. This dye was replaced by sodium tetraiodophenolphthalein because the latter could be given in smaller quantities with lessened reaction and greater density of shadow. Gradually the oral administration of the dye was introduced and improved. At the beginning this was a very poor substitute for intravenous administration, but it was used because many radiologists would not go to the trouble or worry of intravenous injection, and many faulty radiographic reports were issued. In March, 1928, I published a paper[2] containing the evidence collected after 500 cholecystographies, in which I expressed the opinion that I regarded the intravenous method as the more accurate. Now after another four years, during which period cholecystography has become a routine procedure in the investigation of gall-bladder cases, I am still of that opinion, though I have also to acknowledge such a marked improvement in the quality and function of the dye now used for oral administration that it now falls little behind the intravenous in its results.

The arguments in favour of the intravenous method are that a known amount of dye is administered into the circulation, and the degrees of concentration of the dye in the gall-bladder is not so confusing; the gall-bladder shadow is not obscured by the shadow cast by the dye in the intestine. The hepatic function test can be made at the same time. It can be given to the patient with nausea of a degree which will not tolerate oral administration. Preferably the patient is kept under the control of a nursing staff until the radiograms are made. The oral route, on the other hand, does not necessitate hospital or nursing-home attention; the patient can take the dye at home and come up next morning for radiography, while the radiologist is saved the trouble and worry of an intravenous injection and its complications. The reactions to the dye are relatively slight or absent; in many patients no abnormal symptoms are detected, and no cathartic action from the dye occurs, though in others the dye is strongly purgative.

In the early days of oral administration the dye used often caused violent vomiting, but the present oral preparations rarely do this.

INTRAVENOUS CHOLECYSTOGRAPHY

After the preliminary examination an inspection of the anticubital fossæ is made, and that arm is selected which shows the most prominent veins.

At about 9 P.M. the patient, lying in bed, has the arm cleaned up with spirit; a tourniquet is applied to the upper arm sufficiently to cause distension of the veins, and a syringe needle is thrust into the median basilic vein. Blood spurts out of the end of the needle until a connexion is fixed into it from a 40 c.cm. syringe barrel containing a few cubic centimetres of sterile normal saline. The syringe is connected by means of a rubber tube containing a small glass connexion near the needle end. The saline is allowed to flow into the vein, the tourniquet being taken off immediately the connexion is made between the syringe and the needle. The flow of saline is slow, and when most of it has left the syringe with every indication that it has gone into the vein, 30 c.cm. of a filtered sterile solution containing 3 g. of sodium tetraiodophenolphthalein are poured down the side of the syringe barrel. If the flow ceases (and this appears to happen more often in those veins one would least expect to give rise to trouble—i.e., the large superficial veins which are readily entered and from which blood spurts out while the tourniquet is in position), the piston of the syringe can be applied and gentle pressure applied until the whole of the dye has been injected. On the slightest indication that the dye is not going into the vein the injection is stopped.

No food or drink, apart from sips of water, is allowed. The patient is brought to the radiographic department at 9 A.M., 11 A.M., and 1 P.M. on the following day, and radiograms are made of the gall-bladder area, using the same technique as in the preliminary examination. Unless the gall-bladder is visible on the screen, it is customary to always use 15″ × 12″ films, because of its variable position. Any abnormal shadows or irregularity of the gall-bladder should be investigated by taking additional radiograms in different planes. Bubbles of gas in the intestine may simulate negative gall-stone shadows. After the sixteenth-hour radiogram has been taken the patient is given a barium meal made up with Horlick's milk; a radioscopic examination is made of the stomach and duodenum, and the relation of the gall-bladder to these structures and its mobility is carefully observed on the screen during palpation.

In a paper[3] on gall-bladder radiography in 1927 I recorded non-filling of the gall-bladder in two cases in which the gall-bladder was normal, but in which an ulcer of the stomach and duodenum had been found at operation. This observation has since been made by a number of radiologists, and its possibility should be borne in mind. Only recently such an event was brought to my notice.

A patient had had a cholecystographic examination, and the radiologist had reported that the gall-bladder had failed to fill; but as the symptoms did not suggest gall-bladder disease the patient was not operated upon. He died from the perforation of a chronic ulcer on the lesser curvature.

This emphasises the importance of following up the cholecystogram with a barium meal. No clinician can be certain that it is the gall-bladder or the stomach or duodenum which is diseased. Because the patient's symptoms suggest gall-bladder disease, and because the cholecystogram suggests a normal gall-bladder, it cannot be said that organic disease is or is not present. If necessary, of course, the barium meal can be given later. In one case in which only a cholecystograph was asked for I recorded that the gall-bladder showed normal appearances, the patient was brought back to hospital within a fortnight with a perforated duodenal ulcer from which he died. At the post mortem, the cholecystographic findings of a normal gall-bladder were confirmed, and the perforated ulcer was shown. This case and the one recorded above proves that while in some cases of ulcer the gall-bladder fails to fill with dye, this cannot be depended upon. The additional radiograms taken after the barium meal may reveal gall-bladder or other shadows which have not been observed on the previous radiograms. Often one sees shadows of definite significance on one radiogram but not on another, or its significance is confirmed by alteration in position or arrangement seen on other radiograms.

ORAL CHOLECYSTOGRAPHY

The preparation which I am now using is that called opacol. It is stable, is not too unpleasant to take—very rarely causing any sickness—is readily absorbed, and gives a good contrasty shadow of the normal gall-bladder. It is British-made, and less expensive than some of the other preparations.

The patient is asked to come for a preliminary radiographic examination, after which he is given a bottle containing the opacol with the request that he has a fat-free meal—dry toast or biscuits and tea—at 6 P.M., and the whole of the contents of the bottle at 8 P.M., in half a tumbler of water, followed by a further drink of water to remove the taste from the mouth. The patient is advised to go to bed just before 8 P.M., and to return for X ray examination at 9 A.M. the following morning, having taken no food or drink apart from sips of water since 6 P.M. the previous evening.

The same technique for radiography is adopted as that already described, and the barium meal is given after the seventeenth hour from taking the dye. A further radiogram is always taken three hours after the barium meal, for this may give additional evidence on the condition of the gall-bladder, stomach, or duodenum.

With the oral preparation, the only likely ill-effect is purgation, and in many cases this is not observed. No reaction of a serious nature due to the dye has ever been recorded. The test is therefore safe, and in a very high proportion of cases (probably over 90 per cent.) accurate, particularly if the preliminary examination and the barium meal are used as part of the examination as I have described.

If the cholecystographic findings, using the oral method, are opposed to the clinical findings, further information may be gleaned by a second oral test or by intravenous administration of the dye.

NEGATIVE SHADOWS

Cholesterol and pigment gall-stones have a radio-opacity so similar to that of the bile and surrounding tissues that it is impossible to demonstrate them on the ordinary radiogram, even if the gall-bladder is radiographed after its removal from the body. When, however, the gall-bladder has been filled with bile containing tetraiodophenolphthalein, which has a greater radio-opacity than the stones, these appear as darker shadows, resembling gas-bubbles (negative shadows) within the lighter gall-bladder shadow. On the other hand, shadows of gall-stones of greater radio-opacity, which ought to have been shown on the preliminary radiograms, may now be obliterated because of the increase in density of the gall-bladder. These negative shadows are so like gas-bubbles that, unless care is used, the latter may be interpreted as gall-stones; radiograms in the lateral and semi-lateral positions will alter the relative positions of the gas-bubbles in the intestine and the gall-bladder; but negative gall-stone shadows, though they may appear to have altered in position, remain within the shadow of the gall-bladder.

CONCLUSIONS

(1) No branch of radiology requires more careful attention to technique and detail than gall-bladder radiology.

(2) The X ray examination should always include preliminary examination, cholecystography, and barium meal—in this sequence.

(3) Some gall-stones can be shown on the preliminary radiogram, and some on the cholecystogram, but there remains a proportion which cannot be shown on X ray examination. The greater

he care taken in technique, the smaller is this esidue.

(4) The radiographic demonstration of gall-stones does not necessarily mean that the lesion causing the patient's illness has been discovered. Gall-stones may exist without causing any marked symptoms, or they may produce symptoms which are atypical.

(5) The dye can be administered either by the mouth or intravenously. The former is now the best routine method of examination, though the latter is still the most accurate.

(6) In about 96 per cent. of cases non-filling of the gall-bladder indicates a pathological condition of the gall-bladder, often accompanied by stones, though these may not be shown by the radiogram.

(7) Poor filling of the gall-bladder on repeated examination also indicates a pathological condition of the gall-bladder.

(8) In a high proportion of cases a good gall-bladder shadow, which is normal in shape, size, and position, uniform in outline and density, and which contracts after a meal to a much smaller size, indicates a normal gall-bladder. A small proportion of such gall-bladders may be diseased, and even contain a small collection of stones.

(9) Any abnormality in the area of the gall-bladder before or after the gall-bladder has been filled with dye should be investigated by further radiograms taken according to the type of abnormality seen.

(10) It has been demonstrated that a large collection of gall-stones in the gall-bladder can be passed into the intestine via the ducts.

(11) Complete gall-bladder radiology enables us to give a fairly accurate and the best opinion as to the condition of the gall-bladder.

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Clinical and Laboratory Notes

A CASE OF PERNICIOUS ANÆMIA

ASSOCIATED WITH MENTAL DISEASE

By Isaac Atkin, M.D. Lond., D.P.M.

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Pernicious anæmia is more often a cause of mental disease than is generally recognised, and it is important to elucidate this ætiological factor as early as possible, since adequate treatment is followed by very satisfactory results. The following case illustrates this, as well as several other points of interest.

A married woman, aged 59, was admitted to the Knowle Mental Hospital under certificate on June 24th, 1931. She had never been previously certified, and there was no history of insanity in the family. The general physical condition on admission was moderately good; the heart was enlarged (old mitral disease), and there was some arterio-sclerosis, but there were no abnormalities in the nervous system. She expressed persecutory delusions directed against her husband: "He is making life a hell for me; he attempts to murder me or to drive me to suicide; he is a rotter and a drunkard." She took no interest in her environment, and her mood was one of depression.

The progress of the case was as follows:—

July 8th, 1931: Seems to be developing some insight. Thinks her accusations were not entirely justified. Still very depressed and anergic. *15th:* Remains depressed. Weeps readily.

August 5th: Complains of faintness, weakness, loss of strength. Unable to stand. No mental change.

Oct. 16th: Complains of abdominal pain, feels as if "a band were constricting her abdomen." Listless and anergic. *17th:* Skin shows lemon yellow colour. Blood count: red cells, 1,460,000; white cells, 2230; Hb., 35 per cent.; colour-index, 1·7; marked poikilocytosis and anisocytosis. Patient complains of numbness and stiffness of the lower extremities. Her gait is very unsteady and ataxic. The deep reflexes are brisk. Marked Rombergism is present. The plantar reflexes are indeterminate. No objective sensory disturbance. Patient is put on ½ lb. liver daily—half raw, half cooked—and a lemonade containing acid. hydrochlor. dil. ʒii to half a pint.

Nov. 2nd: Blood count: red cells, 3,070,000; white cells, 10,900: Hb., 45 per cent.; C.I., 0·7; some anisocytosis present. Patient unable to walk. Still complains of "numb" feelings in the back and lower extremities. *24th:* Mental improvement commencing. Does not weep. Attempting to occupy herself.

Dec. 24th: Taking more interest in her environment and is decidedly more cheerful.

Jan. 16th, 1932: Blood count: red cells, 5,400,000; white cells, 6900; Hb., 74 per cent.; C.I., 0·7; slight anisocytosis. The left knee-jerk is somewhat increased. The plantar reflexes are still indeterminate. Patient still unable to walk without aid. No sensory disturbance. *25th:* Can walk a few yards on her own. Uses a wide base.

March 19th: Blood count: red cells, 5,540,000; white cells, 6600; Hb., 90 per cent.; C.I., 0·8. *24th:* Skin and mucous membranes good colour. Gait steady, and she can walk unsupported, though still uses a somewhat wide base. The plantar reflexes are flexor. There is a little spasticity in the muscles, and the left knee-jerk remains exaggerated. *30th:* Discharged on one month's trial.

April 27th: Discharged off trial.

That pernicious anæmia can cause mental disease is now an accepted fact. Psychogenic factors can of course be elicited in these cases, as indeed in every type of mental disease; but these factors are only a condition and would not of themselves bring about a mental disturbance. In this particular case the patient had repressed into her unconscious hostile feelings directed against her husband (for which indeed there may have been some justification) and the impaired physical state, by lowering the power of the repressing psychic forces, permitted these feelings to appear in the conscious as persecutory delusions.

Mental symptoms may appear before the condition of pernicious anæmia is recognisable clinically, and may be so prominent that the underlying blood state is overlooked. Hence the importance of an early blood examination.

Of special interest here is the development of early signs of subacute combined degeneration of the spinal cord, and their amelioration under liver treatment. According to McAlpine [1] the effect of liver on the neurological signs is variable, and he states that improvement is only slight once the Babinski reflex appears. In the present case the neurological symptoms were attacked early—no Babinski sign having been obtained—and this may account for the satisfactory response. C. C. Ungley and M. M. Suzman [2] lay stress on the importance of instituting liver therapy as soon as possible.

In those cases of pernicious anæmia with psychotic symptoms that develop the signs of subacute combined degeneration there is a danger of diagnosing the latter as "functional." In fact the possibility of hysterical astasia-abasia was raised in this case at first. The blood examination settled this point at once.

I wish to thank the medical superintendent, Dr. J. L. Jackson, for permission to publish this case.

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[1] The Lancet, 1929, ii., 643.

[2] Newcastle Med. Jour., 1929, ix., 67.

ANEURYSM OF THE AORTIC ARCH

TWENTY-NINE YEARS SURVIVAL

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AND

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MEDICAL TUTOR AND REGISTRAR

In January, 1899, a man, aged 33, was admitted to the General Infirmary at Leeds under Dr. A. G. Barrs, complaining of cough, pain in the front and right side of the chest, and in the shoulders and back of four weeks' duration.

He had had "rheumatism" in the shoulders three years and an ulcer of the leg eight months before. He had had malaria at the age of 18, but denied having had syphilis. His occupation, that of packer and porter, entailed very heavy work.

There was notable pulsation in the right chest, most marked in the second interspace where it was expansile in character. In this region there was a large area of dullness and marked tenderness over the inner ends of the second and third left interspaces. Tracheal tug was present but the vocal cords were normal. Aortic systolic and diastolic bruits were heard. Urine normal. The diagnosis was aneurysm of the first part of the aorta. The patient was put upon iodide treatment and sent home after two months.

In March, 1928, 29 years later, he was readmitted under Dr. J. le F. C. Burrow with weakness, wasting, and anorexia of one year's duration. He had occasional vomiting and some difficulty in walking in the dark, and there had recently been some frequency of micturition.

Since his discharge from the infirmary in March, 1899, he had led a perfectly normal life. He had pneumonia in 1905 and made an uninterrupted recovery. With this exception he had been at work as a janitor during the whole interval of 29 years, and the only symptom he ever complained of was a slight unproductive cough. He was never short of breath. Of his two sons one was killed in the war; the other is married, and his wife's only pregnancy terminated in stillbirth. This son is himself in excellent health. The patient had been teetotal during the whole of the period.

On examination (March 24th, 1928) the apex-beat was normal. There was pulsation to the right of the manubrium with an area of dullness, an aortic systolic bruit, and an accentuated aortic second sound. Blood pressure was 106/80 mm. Hg, pulse 88–100, temperature normal, respirations 24. The blood Wassermann reaction was negative. The pupils were sluggish to light, knee-jerks sluggish, and ankle-jerks absent. A blood count showed red cells, 4,530,000; hæmoglobin, 50 per cent.; colour-index, 0·56; white cells, 9100. X ray examination revealed a very large aneurysm mainly in the right side of the chest, the wall of which appeared to contain calcareous material. The patient died one week after admission.

Post-mortem examination.—There was a large aneurysm of long standing with enormously thickened and partly calcified walls in the upper part of the chest. It was mainly median in position but extended rather more to the right than to the left. Roughly globular in form, it measured about 4½ in. from above downwards, 5 in. transversely, and 3½ in. in antero-posterior diameter. It was adherent in front to the chest wall, and its upper border was about 5 in. below the level of the thyroid cartilage. After fixation of the thoracic contents en masse a series of transverse sections were made. These showed that the aneurysm was of saccular type, springing by a rounded orifice rather more than ½ in. in diameter from a point near the junction of the first and second parts of the aortic arch. The outer part of the aneurysmal wall was densely calcareous, and the interior of the sac was largely occupied by dense laminated thrombus. The unobliterated portion, which communicated directly with the aorta by the aperture above-mentioned, measured approximately 2 by 2 by 1 in. The first and second portions of the thoracic aorta were much dilated and their walls grossly diseased, partly old syphilitic scarring but mainly atheroma with calcification. There was also early atheroma in the terminal 2 in. of the abdominal aorta.

There was a large malignant tumour (hypernephroma) in the upper part of the right kidney with involvement by direct extension of the right suprarenal and right lobe of the liver.

Careful examination revealed a doubtful scar on the penis, and there was an old tuberculous (?) lesion of the left wrist.

The case is a remarkable example of prolonged survival and continued good health in face of a large intrathoracic aneurysm. When the patient was first in hospital in 1899 it was quite clear that he had a large aneurysm probably of the first part of the aortic arch. A gloomy view of the prognosis was taken at the time, and he was sent home with very little hope of recovery. He lived for 29 years thereafter, and for nearly the whole of this period not only enjoyed good health but was able to continue in full work as a janitor. At autopsy there was no evidence that the aneurysm had itself contributed to the fatal issue. Though still present, it had enormously thickened walls with dense calcification in the outer layers. Death resulted from a hypernephroma of the right kidney with involvement of the adrenal and liver.

We beg to express our indebtedness to Dr. Barrs and Dr. Burrow for permission to make use of the clinical notes of this case.

A CASE OF ALCOHOLIC CIRRHOSIS

TREATED ON THE PRINCIPLE OF THE TALMA-MORISON OPERATION

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SENIOR ASSISTANT MEDICAL OFFICER ST. ANDREW'S HOSPITAL, BOW

A woman, aged 52, was admitted to St. Andrew's Hospital, Bow, under my care on Dec. 31st, 1928.

History.—Her trouble began in the early months of 1928 with nausea, particularly in the morning, and loss of appetite. This was soon followed by morning vomiting and general lassitude. The weakness increased and she began to lose weight, noticing that her arms, legs, and face were much thinner. In May, 1928, she found that her abdomen had become swollen, the swelling increasing with great rapidity. She became progressively weaker and finally was unable to climb stairs. By December, 1928, she was confined to bed. She had spent the greater part of her life employed in a public-house and was a heavy drinker of spirits, imbibing approximately a bottle of gin daily. Her usual weight was 12 st. 3 lb.

On admission the abdomen was greatly distended, leaking a straw-coloured ascitic fluid from an umbilical hernia the size of an orange. There were distended veins coursing over the anterior abdominal wall and chest, limbs and body wasted, and feet cold and œdematous. The leaking rupture was acting as a safety-valve, and the patient discharged herself on Jan. 21st, 1929. Within three weeks she was readmitted having again become distended. Paracentesis abdominis was performed and 15 pints of straw-coloured fluid were withdrawn. In the following few months paracentesis was performed on seven occasions. She was now very weak and emaciated, her face was sallow and drawn, her eyes sunken, and the conjunctivæ were slightly jaundiced. Her weight was now just under 7 st. The last paracentesis had drained 21 pints, but within seven days she was again distended. She was also troubled with intractable diarrhœa.

This picture of alcoholic cirrhosis and associated gastro-enteritis fitted perfectly with the pathology of the condition, the portal or multilobular cirrhosis. The degeneration of liver cells and the formation of fibrous tissues surrounding and compressing the intra-hepatic branches of the portal vein was attributable to the action of the alcohol in producing gastro-enteritis and consequent toxæmia, and to its direct action on the liver. This gradual obstruction of the intrahepatic portal venules had given rise to congestion followed by ascites. The alcohol and the toxins produced by the gastro-enteritis perhaps also increased the flow of peritoneal fluid by irritation of the peritoneum—a form of aseptic peritonitis.

To aid the normal venous connexions between the systemic and portal circulations, an accessory venous circulation can be formed by producing adhesions between the greater omentum, liver and spleen, and the parietes. in this way overcoming the portal obstruction. With this end in view, operation was undertaken after full explanation of the risk entailed.

Operation.—An oblique incision was made from the costal margin at the lateral aspect of the left rectus and running downwards to the lateral aspect of the right rectus well below the umbilicus. The recti were well separated and the peritoneal cavity was widely opened. The fluid was drained and mopped away. The liver was approximately normal in size. its surface being irregular and covered by a thick white coating. There was perisplenitis and enlargement of the spleen. The surfaces of these were scrubbed with a hard hand-brush, as was also the peritoneum adjoining them. Hæmorrhage was severe. The greater portion of the gastro-colic omentum was brought through and buried between the posterior sheath and the recti. Suprapubic drainage was performed. a glass tube being used. The peritoneum was then closed by interrupted sutures. The tube was removed on the fourth day. the wound healed on the eleventh day. Three weeks later paracentesis was performed, 4½ pints draining. There was no further tapping.

On August 1st, 1929, the patient was readmitted with a strangulated umbilical hernia, the small intestine having slipped into the sac previously occupied by the fluid.

Second operation.—The small bowel was found to be gangrenous and enterectomy was performd, two feet of small intestine being removed with end-to-end anastomosis. The liver, spleen, and omentum were firmly adherent to the parietes. Hanging to the intraperitoneal portion of the omentum there were many mucoid pear-shaped globules the size of small grapes. Radical cure was performed for the hernia. Convalescence was uninterrupted and the patient discharged on the 23rd day.

From September, 1929, until Jan. 1st, 1932, the patient was at work daily, her weight being 12 st. 2 lb. She had occasional attacks of distension which passed off after a few days. She was taking two ports and two glasses of stout a day. Appetite and bowels normal. On April 27th, 1932, she was readmitted with the history of four months' jaundice. She had had an attack of hæmatemesis three days before admission. She was deeply jaundiced and there was bile and albumin in the urine. The pulse was feeble and irregular, the chest full of rhonchi and crepitations. Blood was found in the stools. Death occurred two days after admission.

Post-mortem examination.—The body was well covered, the skin deeply jaundiced. The liver was small, firm, deeply stained and shrunken, its surface being irregular with very little sign of any compensatory hyperplasia. The spleen was firm and enlarged, both organs being firmly adherent to the parietes. The greater omentum was firmly consolidated with the anterior abdominal wall. There was an acute gastritis with small erosions of the mucous membrane. The kidneys were small and granular. The lungs were congested and the heart was soft and friable.

The noteworthy features of this case are: (1) that the formation of widespread adhesions produced a permanent cure of the ascites in an advanced case; (2) that enterectomy was later successfully performed with normal healing of the intestine without production of the ascites; (3) that the hæmatemesis just prior to death was due to erosion of the stomach, not to rupture of the gastro-œsophageal veins; (4) that the spread of fibrous tissue encroached on the bile-ducts and led to an intrahepatic obstructive jaundice; (5) that there was very little sign of any compensatory hyperplasia of the liver tissue.

BRITISH MEDICAL ASSOCIATION

CENTENARY MEETING IN LONDON

SECTION OF PUBLIC HEALTH

THIS section opened with Sir GEORGE NEWMAN'S presidential address on the rôle of the private practitioner in relation to the progress of preventive medicine during the past 100 years and his influence on prevention at the present day.

The Practitioner and Preventive Medicine

Coincident with the passing of the Reform Bill, the growth of knowledge since 1832, he said, marked an epoch unequalled in any previous age. In the passage from central to local government and from aristocratic to democratic institutions, the resulting great social transition. as shown by the ultimate State control by the people, had led to the harvest of philanthropic effort in the cause of public health.

Two dominant factors were to be noted in that steady march of progress: firstly, the expansion of science and the application of scientific method; secondly, the habit of coöperation to which individualism had given place. In a review of the stages through which modern preventive medicine had passed, it was natural to dwell on the improvement brought about in their environment by the great sanitarians of the past in securing such benefits as the general use of pure water-supplies; the isolation of the sick; the removal of nuisances; housing reform; main drainage and the disposal and treatment of sewage; food inspection; factory acts; and vital statistics.

A feature of the inter-relationship of medicine and public health had been the endeavour of 18th century practitioners, Glisson, Sydenham, and others, whose example stimulated those who came after in the 19th century to search out the dependence of disease on environment, to introduce notification and the isolation of infectious disease. By their study of work in the factory began industrial welfare—to them likewise was due the reform of midwifery, and the inquiry into child sickness and mortality, and the establishing of the dispensary. It was by their support of vaccination that the principles of immunity became realised, and through them began British epidemiology.

As the study of anæsthetics had given surgery its great advance, so had new means of measurement and methods of physical diagnosis aided the physician in the differentiation of disease. There came to light too the importance of personal hygiene, and by the observations of notable pioneers, Richardson, Budd, and others, had been interpreted the association of certain infectious diseases with the means of spread. thus leading to their prevention, as in the case of typhoid fever, cholera, and tuberculosis. As the result of the new poor-law in 1834, there had been opened up the relief of the deplorable insanitary conditions then existing. By that step medicine had become preventive as well as curative, and thus some 4000 practitioners had been called upon to take part in the State service of the prevention of disease. The President traced the development of legislation from that time until 1911, when through the passing of the Insurance Act means of prevention as well as the treatment of disease were brought under the control of the practitioner. His advice and aid were now sought by the insured at the outset of illness, and much permanent and temporary ill-health was averted by timely measures. Prevention in the liberal sense had been effectively encouraged by health insurance. Far from a "gulf" existing between preventive and curative medicine, too strong emphasis could not be laid on their close mutual relationship; they were so interdependent and complementary as to be inseparable.

Measles Prophylaxis

Prof. C. C. OKELL (London) opened a discussion on the attenuation and prevention of measles. He said that the knowledge requisite for checking much of the loss of life and disability due to measles had long been available, but little effort had yet been made to apply it in this country. Unfortunately next to nothing was known of the ætiology of the disease. Among animals only the monkey was at all susceptible, so that an immune serum could only be got from human beings, who had had the disease. Although some unexplained failures had occurred, the bulk of experience had lent support to the value of convalescent serum as an effective prophylactic, success being claimed in 80 to 90 per cent. of cases. For public health purposes the use of "adult" rather than "convalescent" serum would be much more convenient if it was found to be equally effective. Although in theory the amount of antibody became much reduced with lapse of time after an attack, there was, nevertheless, evidence that adult serum was of use. In the absence of a greatly needed central organisation to further the work, it was difficult to collect sufficient serum for extensive trial.

The donor experienced a tonic effect on the removal of 200–300 c.cm. of blood, and Prof. Okell described the apparatus he had devised for blood-letting.[1] The scheme he envisaged for the collection of serum on a large scale would possibly claim the services of a full-time medical officer; moreover, the treatment and preparation of the serum for human use demanded experience and technical knowledge. The present limited supply of serum should be reserved for children under the age of 4, who were not only more susceptible but also far more easily protected than older children. While passive immunity could be given for a short period, subsequent exposure to infection might still determine an attack. The general belief that measles could be modified by doses of serum insufficient to prevent the disease could not be accepted without more conclusive evidence, since sometimes trivial attacks occurred in untreated children. Prof. Okell suggested as points for discussion whether the completely protected child might still be infectious to others, and whether sterile human serum injected into children ever gave rise to local reactions.

Dr. DAVID NABARRO (London) said that human convalescent serum had proved far more reliable than any animal serum, and gave protection in over 95 per cent. of cases. More extensive preparation and wider use of the serum was desirable. The difficulty of obtaining a sufficient supply of serum had been met elsewhere and could be overcome in England, especially if adult serum proved of value. He preferred to collect convalescents' blood at 7 to 14 days after defervescence. The dosage ranged from 3 c.cm. for patients under 1 year, increasing by 1 c.cm. for each year up to 7 c.cm. for those over 5 years, 10 c.cm. at 10 to 12 years, and 12 c.cm. for adults. Except for a few cases in older children of transient erythema and rise of temperature to 100° or 101° F., the effects from injection of properly prepared serum were not to be feared, and being of human origin, the serum did not cause anaphylaxis or reactions. Its use, however, in young infants under 6 months was not advised; they were not usually susceptible, and injections might cause rise of temperature and malaise. If complete protection was desired, with passive immunity for two to four weeks, serum should be given on or before the fifth day of incubation; but if a mild or modified attack, with subsequent lasting immunity, injection should be given between the sixth and ninth days of incubation. The so-called "sero-attenuation" was much to be preferred, as the condition might be apyrexial with only transient rash, and it was probably non-infective unless there was coryza or bronchitis; whereas the passive immunity by "sero-prevention" was so short that further protection became necessary during an epidemic. After the ninth day of incubation, protection by serum could not be expected, and serum treatment of measles during attack was of no value. Dr. Nabarro strongly emphasised the need for official action in arranging for preparation and distribution of serum on a sufficient scale.

Dr. WILLIAM GUNN (London) pointed out the importance of study of the epidemiology and clinical features of measles, combined with inquiry into the conditions calling for the use of serum prophylaxis, as well as machinery for a survey of case records, if a just estimate of the value of any special line of treatment was to be made. Exact deductions from statistics on measles morbidity were not possible in the absence of compulsory notification of the disease. He referred to the change of attitude to infectious disease in the past 30 years as an epitome of the history of the reaction of the human race to such disease. The sacrifices and libations of our ancestors, who fled to escape an epidemic, closely corresponded to the rites observed only in recent years in the pouring out of carbolic and burning of sulphur in the belief that thus spread of infection would be averted. In was in 1920 that public health authorities gave up purely preventive measures of control, realising that an epidemic would continue so long as there was susceptible material remaining. Attempts were now made to postpone attacks until a later age or season was reached, to provide medical and nursing supervision in the home, and hospital treatment for severe cases. Dr. Gunn described his experiences in serum prophylaxis in the 1927–28 and 1929–30 measles epidemics. After trying many sera he regarded convalescent human serum as the only prophylactic to give uniform results free from harmful effect.

He gave the serum in minimum doses of 5 c.cm. to all cases. The dose was increased according to age, the number of c.cm. being twice the years of age. Intramuscular injection soon after contact with infection and before the fifth day gave complete temporary protection; the same dosage given between the fifth and ninth day resulted in an attenuated attack.

In the course of five ward outbreaks at the Western Hospital, the last hundred contacts had thus been completely protected. Further controlled investigations were required before accurate conclusions could be formed on the effect of serum prophylaxis. Steps were now being taken to ascertain the value of adult serum, and, if this proved satisfactory, it was proposed to arrange for the pooling of serum from volunteers in order to furnish a supply for use in hospitals and private practice. It was necessary to take care to select donors who had really had measles.

A total of over 24,000 c.cm. of adult serum had been obtained, averaging over 100 c.cm. per donor, and over 2000 doses had been issued to L.C.C. general and special hospitals since December, 1931, and to children's homes and residential schools since March, 1932.

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[1] See THE LANCET, Sept. 3rd, p. 514.

Results of administration of adult serum in hospitals and residential schools had shown that 77·2 per cent. were completely protected, and that 17·3 per cent. had attenuated attacks; in 2·9 per cent. there was no reduction in severity. Of those under 3 years, 81·2 per cent. were protected; at 3 to 5 years 69·2 per cent.; and at over 5 years the protection rate was 89 per cent. In children's homes and residential schools 85 per cent. of those injected were protected; 14 per cent. had modified attacks; and 1 per cent. showed no result from injections.

A full account of the work of preparation of material and the procedure adopted would appear in the report of the Medical Officer of Health for London on the measles epidemic of 1931–32.

Dr. Gunn's personal impression was that though convalescent serum yielded better protection than adult serum in the doses given, there was little to choose between the two when modification of the attack was desired. The dosage of adult serum advised was double that of convalescent serum—namely, a minimum of 10 c.cm. increased according to age. As to the points raised by Prof. Okell, antibacterial serum and normal horse serum both had some relieving effect in measles, as also in acute respiratory affections. The carrier state was unknown in measles and the contact without clinical attack did not appear to harbour the virus. A modified attack, in which the patient had less catarrh, was less likely to convey infection than a normal attack; but, when transmission did occur, the disease bred true and might give rise to quite severe attacks. Although French writers had recorded severe reactions following measles serum injection, he had never observed more than vague local tenderness and occasional slight pyrexia on the evening of injection—which he regarded as probably of psychic origin.

Dr. T. M. **Hunter** (Glasgow) said that in the Glasgow epidemic of 1931–32 nearly 3000 c.cm. of serum were procured from 54 donors, who had become available when the epidemic was well advanced during November, 1931. Collection was made on the seventh to tenth day of normal temperature, and after treatment with trikresol, the serum was stored in an ice-chest. Disregarding certain doubtful cases there remained 233 contacts who had received convalescent serum. Of these, 185 had escaped attack, yielding 80 per cent. completely protected; 36 had had attenuated attacks. Eight had had "mild" attacks—i.e., slightly more definite than the attenuated form—and four developed "classical" measles; but as the rash had developed at one to five days after injection, the serum had been too late for prevention. Out of 32 control contacts, not given serum, 23 got typical measles.

Dr. Hunter then discussed the various factors bearing on the investigation, the day of injection of serum, the age of the serum used, the age of injected child, the amount of serum given, and the duration of immunity. He believed that the best use to make of convalescent serum was not to give temporary prevention by large doses, but by the 5 c.cm. dose to change a possible fatal attack into a modified one without complication, and thus to ensure lasting immunity.

DISCUSSION

Sir **George Newman** contrasted the encouraging constructive work of the last few years with the previous helplessness experienced in dealing with measles. There were formidable administrative difficulties in the way of a rapid adoption of measles prophylaxis but steps were, however, being taken in the Ministry of Health to help forward the movement.

Dr. J. I. **Collier** (London) described the important part played by the general practitioner who first saw the case and treated it. The patient was only sent into hospital if complications arose. Of the 60,000 cases of measles in the 1929–30 epidemic, 6000 were treated in hospital and of those about one-third were admitted with complications. The hospitals were, he said, really treating only the complications of measles and not the disease itself. Since serum was of use only before the ninth day of incubation, every case of measles seen in private practice, at the stage when diagnosis was possible, was too late for serum treatment. There was, he thought, much guesswork in the immunisation of contacts, for which 95 per cent. protection had been claimed.

In a series of 7000 children at the High Wood Hospital in ten years, there arose 16 primary cases of measles, and though no active preventive measures had been taken, only five contacts were subsequently attacked. If all the hundreds of susceptible contacts had been given serum as advocated, almost 100 per cent. protection could have been claimed. Dr. P. Stocks had shown that under the best conditions serum prophylaxis could only reduce an epidemic by 13 per cent., and the conditions governing even that small percentage, Dr. Collier stated, were hopeless in practice. From Dr. A. Hoyne's good results with amidopyrin, which he had himself confirmed both in practice and in hospital, he regarded the use of the drug in the pure state as the most valuable method of treating and attenuating measles. Whilst convalescent serum in ward outbreaks was of value for ensuring a modified attack, and only exceptionally for producing protection, Dr. Collier held that it had no value in the control of epidemics.

Dr. A. S. M. **Macgregor** (Glasgow) confirmed Dr. Hunter's impressions of the value of prophylactic serum in Glasgow. There was, he said, adequate supply of serum in Scotland, as most adults had had the disease and readily supplied their sera.

Dr. C. **Killick Millard** (Leicester) showed charts of measles and whooping-cough mortality in Leicester during the past thirty years, demonstrating the marked fall of the quinquennial average mortality from measles since 1917 in contrast to the continued high mortality from whooping-cough.

Dr. W. G. **Savage** (Somerset) said that in Somerset also there had been a fall in measles but not in whooping-cough mortality. He advocated measures directed to delaying or attenuating the attack, as there was little chance of preventing measles. For those under 5 years, the most exposed to the severe type, protection against early attack and postponement till after 7 years should be the objective.

Dr. D. S. **Sutherland** (Manchester) said that voluntary donors receiving a fee of three guineas for collection of serum should previously be examined by the public health department for verification of diagnosis to avoid the chance of their having had only rubella.

Dr. R. A. **Glegg** (East Sussex) urged the necessity of active health instruction and propaganda by health visitors as a means of obtaining offers of convalescent serum.

REPLY

Prof. **Okell** stressed the importance of more analysed statistics. The evidence in favour of convalescent serum should be marshalled by a statistician. Although the control of measles on a large scale was, he felt, quite impracticable, the demands for serum were often most urgent. There was need of an emergency scheme even for a limited supply.

Mental Capacity of Children in Relation to Environmental Conditions

Dr. J. RIDDELL (Stirling) gave the results of an investigation undertaken amongst over 1600 Falkirk and Stirling children, including a group of 955 of 9 years (479 boys and 476 girls) and another group of 683 of 13 years (346 boys and 337 girls). The groups of children were arranged in four categories according to mental capacity—advanced, normal, retarded, and very retarded. Among the advanced were a number of bright children with defective speech; and among the very retarded, a large percentage had visual defect or defective hearing. In estimating as to whether a child was fit for a school class, and was suitable according to age, information was supplied by the school teachers and headmasters. It was noted that in the course of their school life girls moved more quickly from lower to higher classes than boys. With regard to observations on environmental conditions, and the study of other points in relation to mental capacity, attention was given to the influence of the following factors :—

(1) *School attendance.*—As to the effect of lateness in going to school; the changing of schools; and irregular attendance. Children in the 9-year group were found to suffer more materially by irregular attendance than those in 13 year age-group and more so among girls than boys. The children of parents of sedentary occupation attended better than those who followed more active employment.

(2) *Nutrition.*—There was a steady decline in height and weight of children to be noted in passing down through the various divisions of mental capacity—i.e., retarded children were smaller and lighter than their fellows.

(3) *Rest in bed at night.*—Little reliable information was forthcoming which could be satisfactorily correlated with effect on mental capacity.

(4) *Environment.*—There was a definite tendency for an increased percentage to appear in the retarded groups of children who also lived in overcrowded conditions—i.e., more than two persons living in one room—whilst those living in less crowded conditions were in a minority among the retarded children.

(5) *Occupation of parents.*—There were more children of manual labourers in the retarded classes where the children were also the most dirty and ill-clothed. On the other hand there were more children of parents with sedentary occupation in the advanced classes; they were also taller and heavier than those whose parents were engaged in manual work. The dull child was to be found among the manual labouring class, living in only one or two apartments, whereas the cleanly child of good mental attainment was more common among the sedentary workers.

(6) *Physical defects.*—All pulmonary and organic cardiac defects tended to cause mental retardation, whereas minor defects, such as enlarged tonsils and adenoids, were found to have apparently little influence.

From the results of his investigations Dr. Riddell concluded that conditions of home environment and nutrition must be regarded as important factors affecting the mental capacity of children.

SECTIONS OF RADIOLOGY AND MEDICINE

AT a combined meeting of these sections the chair was taken by Prof. A. J. HALL (Sheffield), and Dr. STANLEY MELVILLE opened a discussion on

Radiology in Diseases of the Lungs

The place of radiology in lung disease was, he said, now supremely important. As Salusbury MacNalty had said, the pendulum has swung too far and some enthusiasts diagnosed pulmonary tuberculosis solely on X ray evidence, ignoring orthodox physical examination. Definite infiltration could be demonstrated upon a film at an early stage, often before definite physical signs were present, and consistently negative evidence for some months proved the absence of pulmonary tuberculosis. When physical signs were present the pictures usually showed much more extensive disease than the physical examination. As a result of long experience at the Brompton Hospital Dr. Melville believed that in a vast majority of cases the bacillus entered the lung by aspiration, and that any further invasion in the adult was exogenous. In the infant the result of infection depended upon the initial dosage and the degree of resistance, varying from rapidly fatal caseous broncho-pneumonia to a primary focus in the lymphoid tissue round the smaller bronchi. The resulting response in the tracheo-bronchial glands might calcify or might caseate or burst into a bronchial blood-vessel, leading to an aspiration infection or a miliary tuberculosis. The focal reaction to a tuberculous gland might be quite evanescent, or might persist or recur. There was usually some pyrexia and malaise and the infant reacted positively to tuberculin. The skiagram showed a wedge-shaped area extending from the inflamed gland into the surrounding tissue. After a time this area disappeared, and the diagnosis of "pulmonary tuberculosis" was not justified.

Dr. Melville pressed for the general adoption of the word "infiltration" as describing a parenchymatous invasion by the tubercle bacillus, and for the wider use of the term "fibrosis" to describe a condition of healing in which there was definite deviation of the mediastinal content to the affected side. Expressions such as "active" or "healed" should, he urged, be used with caution if at all, as such conditions were clinical rather than radiological. The advantages of the upright position for chest radiography were that fluid levels could be seen and the early screening could be done and the tube racked out for long-distance radiography without moving the patient. The disadvantages were that it was not possible to centre the tube with such accuracy as to obtain an identical picture months or even years later; that it was impossible to deal with an ill patient; and that the female breast threw a much more obstructed shadow in the upright than in the recumbent position. At the Brompton Hospital the difficulty had been solved by cutting a hole in the floor. Dr. Melville showed slides illustrating this apparatus.

PULMONARY TUBERCULOSIS

Dr. R. A. YOUNG said that radiology had become important not only in diagnosis but in the estimation of the extent of the disease and in its treatment. Exaggerated claims made on its behalf were not infrequently the fault of the general practitioner or the physician, who sometimes made unfair demands. To suggest that radiological examination should replace clinical examination was a harmful and unfortunate attitude. Radiological evidence was only one form of physical examination, complementary to ordinary methods and not competitive with them. Careful clinical observations had never been more necessary or helpful, but unfortunately patients shared with the public a deeply implanted belief in instrumental and laboratory investigation, forgetting the presence of the human element and instrumental error. The value of radiological information must depend upon the efficiency of the apparatus and the experience of the person who interpreted the films. The clinician should not ask a radiologist to report on a case of which he did not know the clinical features and history; nor to exclude tuberculosis on one examination. When tuberculosis was suspected it was necessary to collect as much evidence as possible; the history should be taken very fully and was often the best pointer to the diagnosis, especially a temperature record was available. Dr. Young id that he often re-examined the patient with the m in view. The more experience the radiologist d of chest work, the more guarded were his reports, it if he were taken into consultation over the inical features he could often give fruitful explanaons of what was obscure. There was need for much eater relation between radiographic appearances id post-mortem findings than existed at present efore films could be interpreted in pathological rms, or conclusions could be drawn concerning the iset of tuberculous lesions in the chest. The eaker said he was very reluctant to describe ultiple rounded shadows as miliary tuberculosis ithout some clinical support. He disliked the term infiltration" and preferred to use the word deposit," qualified by "old" or "recent." He ipported Dr. Melville's plea for a standardised rm of a report and for agreement on nomenclature. ladiology gave more help in assessing the extent, ge, and character of the lesions, than on their etiology or their quiescence or activity. It gave aluable information on the state of cavities, the resence of effusions, and the displacement of heart, rachea, or diaphragm.

BRONCHIECTASIS AND LUNG ABSCESS

Dr. F. G. **Chandler** said that radiology had shown no more dramatic developments than in these two conditions. With lipiodol the existence, extent, and position of non-obstructive bronchiectasis could be proved and the integrity of the opposite side could be tested. The bronchiectatic area might escape the oil, and careful technique and critical evaluation of the pictures was needed. Radiology also helped in showing the chronic atelectatic lobe and the degree of diaphragmatic rise after phrenic evulsion and of collapse in artificial pneumothorax.

The radiographic picture alone might serve to differentiate abscess from bronchiectasis and new growth by showing a fluid level, but sometimes it only showed a diffuse obscured area. Lipiodol usually stopped short at the periphery of the affected area, but sometimes flowed into the abscess cavity. The distinction between abscess and breaking-down growth might be difficult if radiography were too long delayed. It was said, however, that iodised oil showed a more conical shape at the site of obstruction with a growth than with an abscess. It was rare for the patient with an abscess not to cough up pus, but in a malignant abscess there might be complete obstruction even though an enormous abscess was present. Neither lipiodol nor the position or pattern of the shadow, nor the failure to expectorate the pus, nor bronchoscopy could be relied on in all cases, and diagnosis might be a matter of clinical judgment. In any doubt it was better to operate, and exploratory thoracotomy must be added to the list of diagnostic procedures. Accurate localisation was essential for the successful operative treatment of lung abscess and was usually impossible without radiography. Antero-posterior and lateral views must be taken, but stereoscopy was of less value in this condition than in others.

COLLAPSE TREATMENT

Dr. L. S. T. **Burrell** stressed the importance of coöperation between the clinician and the radiologist, and said that the radiologist should have clinical knowledge of the patient, because even with the most careful radiological examination it was sometimes difficult to detect where the pneumothorax was. There was a tendency to conduct pneumothorax according to the radiographic findings; while the radiogram had great value the condition of the patient and his symptoms were even more valuable. Patients who had been treated some ten years ago when the position of the mediastinum had been ignored had done extremely well. Nowadays, guided by the radiogram, it was common to give very small refills, and the pendulum had swung a little too far. He advised the use of the radiogram to show whether there was any danger of adhesions forming; and the extent and rate of collapse and expansion. Adhesions could only be localised by radiology, and before introducing a thoracoscope and cautery it was necessary to get a definite localisation by rotating the patient. The dangers of thoracoplasty had been reduced, but before it was performed the clinician should see a radiogram of the lungs, especially of the opposite lung. An indispensable guide to the probability of success was furnished by the condition of both lungs. It was dangerous to raise or lower pressure by oleothorax entirely on the radiological findings.

LIPIODOL

Dr. J. **Duncan White** (Edinburgh) said that lipiodol might be injected by one of four routes: supraglottal, through the cricothyroid membrane, trans-nasal, or by the bronchoscope. The route of choice depended on the particular case and the manipulative skill of the operator; moreover, many patients would be suffering from cough and expectoration, and in these patients it was often very difficult to inject anything into the air passages. The preliminary radiogram, which was essential, would show which part of the lung tissue required investigation, and this knowledge might determine the choice of route. The speaker said that he preferred the supraglottal route for routine purposes; the patient must realise that he could breathe perfectly easily with the mouth open and the tongue protruded. The less the display of equipment, the easier the examination. Properly carried out, the injection through the cricothyroid membrane was quite safe. If, however, the radiogram showed that the most pronounced lesions were in the upper lobe, the trans-nasal route was indicated: the patient should be arranged on the radiographic couch in the partial Trendelenburg position. If the bronchoscope was being used, the oil should be injected through it, but as a route its use was unnecessarily severe.

Lipiodol was invaluable in bronchiectasis, as it would show up the general cylindrical dilatation of the basal bronchioles. Dr. White said that he had been unable to observe the differentiating point which Dr. Chandler had mentioned between bronchial abscess and bronchial stenosis due to neoplasm. Before any treatment for lung abscess was carried out it was essential that the extent of the bronchitic change should be determined. Lipiodol would often show secondary bronchitis in the contralateral lung when clinical methods had failed to detect it. Finally, it would often give valuable information of the progress of healing in artificial pneumothorax, phrenicotomy, or thoracoplasty, and would show the size of the cavities before treatment. In chronic empyæma it would determine the extent of the sinuses, particularly when they extended below the level of the diaphragm.

DISCUSSION

Dr. E. W. **Twining** (Manchester) spoke of the necessity for standardisation of technique and of nomenclature. There was a demand, largely from public authorities and silicosis committees, for films which were strictly comparable one with another.

Standardisation should not be overdone; a film which showed abundant lung detail was not necessarily the best for mediastinal lesions. He preferred a film where the bifurcation of the trachea and the left bronchus could just be distinguished. There was a tendency to over-softness and under-exposure by enthusiasts apparently anxious to record hypothetical infiltrations. The radiologist should not adopt such terms as "exudative," "productive," or "cavernous" foci without verifying their meanings in the post-mortem room. A series of films so verified was a priceless heritage. These were some of the terms which had been evolved in Germany on the basis of post-mortem findings, and they deserved recognition. He condemned the idea that a small, barely visible focus might develop into a spreading tuberculous lesion. Tuberculosis advanced by a series of catastrophes, each involving a considerable extent of lung, and the smaller a lesion was the less likely was it to be early.

Dr. J. V. SPARKS showed several sections of typical asbestosis bodies. The radiographic examination, he said, was very important in conjunction with a comparative examination on previous data; many firms had their employees radiographed on engagement. In advanced cases the diaphragm movement was limited and the outline was indistinct and sometimes uneven, with clouding of the costo-phrenic angles and thickening of the pleura. The relative scarcity of visible change did not mean that the condition was less severe than silicosis.

The PRESIDENT paid tribute to the efficiency of the work on silicosis in Johannesburg and the close coöperation there between radiologists and physicians.

Prof. LYLE CUMMINS (Cardiff) described silicotic lung changes and illustrated them with slides, some from South Africa.

Dr. W. R. F. COLLIS traced the development of primary tuberculosis according to the German interpretation. After a six weeks' incubation period some reaction to tuberculin was noted, the "paratubercular" signs appeared and signs of hilus tuberculosis could be seen in the radiograms. Swellings in the hilar glands were seen in about 30 per cent.

Dr. MELVILLE replied.

SECTION OF ORTHOPÆDICS

Mr. R. C. ELMSLIE (London) presided over the session of this section when Mr. HARRY PLATT (Manchester) opened a discussion on

Colles's Fracture.

He considered that this fracture was of outstanding importance. In a series of 835 recent fractures of the lower end of the radius at Ancoats Hospital, 571 were Colles's fractures, 174 were separation of the radial epiphysis, and 90 were styloid and marginal fractures. Mr. Platt gave an account of the early papers and monographs on Colles's fracture, and proceeded to discuss the question of impaction. Stevens, of Boston, had recently put forward the view that the fracture was a true compression injury in which there was a crumpling of the posterior cortical surface, without any actual telescoping of the fragments. The fracture was common at all ages and in both sexes. It was commonly due to a fall on the outstretched hand. The line of fracture was transverse and lay within an inch of the articular surface of the radius, at a site where the bone was ill-fitted to resist a cross-breaking strain. Some displacement was present in not less than 75 per cent. of cases, but gross displacement—that is, the dinner-fork deformity—was relatively uncommon. The displacement might be only a backward tilt, with no displacement en masse, or the fracture might be comminuted. Involvement of the radio-ulnar joint, without alteration of its alignment, was not significant, but fracture of the ulnar styloid, or detachment of the triangular fibrocartilage, might interfere with the recovery of the function of rotation. In diagnosis, the loss of the normal anterior concavity of the wrist was the measure of the backward tilt; this was the important point to determine by inspection, palpation, and radiography. For anæsthesia, two satisfactory methods were available—viz., nitrous oxide anæsthesia, and local anæsthesia by injection of 20 per cent. novocain. The ideal conditions for local anæsthesia were a fracture of some hours' duration, presenting a hæmatoma on the dorsum of the wrist, into which the novocain could be easily and rapidly diffused through a single puncture.

The method of reduction he advocated was a combination of traction with direct force. The traction with hyperextension of the wrist disengaged the fragments. Direct pressure was then exerted on the fragments. Finally, traction combined with palmar flexion and adduction was used to overcome the radial deviation. The reduction was complete only when the lower articular surface of the radius looked downwards and forwards. The position for fixation was one of slight palmar flexion with the hand slightly adducted. The correct splint controlled the extensor surface of the forearm and hand as far as the metacarpo-phalangeal joints. Splinting of the flexor surface was of subsidiary importance. He advocated gutter splints of light metal, or moulded plaster-of-Paris splints.

Fractures without displacement could be treated by a short period of fixation and early mobilisation of the wrist, and of the inferior radio-ulnar joints. Five weeks were ordinarily required for firm consolidation, and the backward tilt might reappear during the first three weeks. After a prolonged trial of the method of treatment by early massage, he had decided that the main disadvantages of the method were the time and energy consumed, and the danger of recurrence of the deformity during massage, in spite of the most careful supervision of the massage students. He now advised a period of fixation lasting five weeks, with active use of the limb in the splint, but no removal of the splint for physico-therapeutic treatment. Certain patients were referred to the massage department at the end of the five weeks. Out of 111 cases treated at Ancoats Hospital during 1925 to 1928, only 3 showed bad results; 92 showed excellent and perfect results, the remainder (16) being classified as good, but not perfect.

Sir WILLIAM WHEELER (Dublin) said that Colles's work was all the more notable because his descriptions were based entirely on clinical observations. He never saw a dissection of a Colles's fracture. The method of applying tight-fitting plaster splints directly to the limb, as taught by Böhler, of Vienna, should be advocated with some caution. He had seen the loss of an arm and of a leg by the use of this method. The students in Dublin had heard so much of the method that one student, shown an X ray of a fractured skull, suggested treatment of the case in a bowler hat. Sir William suggested that slight deformity of the wrist might be consistent with a good ultimate functional result.

Mr. W. A. **Cochrane** (Edinburgh) said that one of the most important points to remember throughout the treatment of these fractures was that the radius was the hand bone. The apparent forward displacement of the ulna seen in some cases after treatment was the outcome of a failure to reduce the backward rock of the radius. There was a rotation displacement of the lower radial fragment on the upper, which could best be reduced by pressing on the ulna, as described by Cotton, and using it as a fixed point round which the lower radial fragment was wound.

Mr. Cochrane emphasised the importance of the hæmatoma in the fracture, and suggested that injection of a local anæsthetic into this hæmatoma might conceivably interfere with bone regeneration. This possibly accounted for the fact that at clinics using local anæsthesia as a routine considerably longer times were allowed for firm union of fractures, and consequently for immobilisation, as compared with those using general anæsthesia. Safety in splinting, he said, was of the utmost importance. Skin-tight plasters should be applied only by specialists; they were very dangerous in inexperienced hands.

Mr. H. A. T. **Fairbank** (London) said that he had found slight degrees of lateral displacement difficult—in some cases impossible—to overcome. Of all the displacements, the backward tilt was the most important to remedy. The type of splint did not matter. He, personally, found Carr's splint, with a wedge-shaped felt pad lying in front of the lower fragment, satisfactory. He reserved plaster splints for the difficult cases with late reduction and comminution. Massage and early mobilisation were used for fractures in old women. He thought stiff fingers were the worst problem met with in these fractures.

Mr. **Whitchurch Howell** (London) stressed the dangers of plaster-of-Paris splints, and the dangers, when using nitrous oxide anæsthesia, of the recurrence of deformity after reduction caused by sudden movements of the patient. He advocated fixation in supination. Stiff shoulders after Colles's fracture were due to injury to the shoulder at the time of the fracture.

Mr. G. E. **Wilson** (Toronto) said that one of the most useful ways to look on Colles's fracture was as a shortening of the posterior surface of the radius. He thought the cases of recurrence of backward deformity after reduction were more apparent than real. The swelling of the soft parts masked a poor reduction, which became obvious about the second week when the swelling had disappeared. He tested for full reduction by palmar flexion. If this was possible to a right angle, reduction was complete. He reduced fractures under the fluoroscope, and fixed the fracture in a plaster splint in adduction for two and a half weeks.

Mr. **George Perkins** (London) said he taught students to test for deformity of the anterior curve of the radius by palpation of the radial artery at the wrist, as in feeling the pulse. He also taught them to use anæsthesia in every case requiring reduction. The shortening of the radius led to lack of alignment at the radio-ulna joint. For this he advocated Baldwin's operation in severe cases.

Mr. F. **Crooks** (Nottingham) said he had been taught as a student to use posterior splints; he advocated brachial plexus anæsthesia for reduction, and deprecated too early removal of splints.

The **President** said that certain principles were taught to masseurs, namely: (1) Colles's fracture is not united in a fortnight; (2) it is possible to redisplace the fracture by early massage; (3) that the masseur should act mainly as a stimulus to the patient, to encourage use of the limb. He liked the plaster slab splint, and thought its correct use should be taught to every student.

Mr. **Platt**, in reply, agreed with Mr. Perkins that gross disalignment of the inferior radio-ulnar joint was a serious disability. In reply to Mr. Wilson, he said that he reduced his fractures by palpation, and checked the result by radiography. He did not use the fluoroscope. The stiff fingers, referred to by Mr. Fairbank and others, he thought were not due to ischæmic paralysis, but were neurotrophic in origin, possibly being caused by an irritation of the posterior interosseous nerve at the back of the fracture.

SECTION OF PATHOLOGY

With Prof. J. **Walker Hall** (Bristol) in the chair, a discussion on

Cholesterol Metabolism in Disease

was opened by Mr. J. A. **Gardner**, F.I.C. (London). Cholesterol, he said, was a constituent of all animal cells and body fluids; in health the urine contained mere traces, but in nephrosis there was considerably more. Cholesterol existed in two forms in the body, (1) free, (2) combined with the higher fatty acids as esters; and these forms were not equally distributed. The pathologist was interested in cholesterol because of the variations of the amount in the blood in disease; thus there was hypercholesterolæmia in some forms of nephritis, some cases of cholelithiasis, of diabetes, &c. Physiological increase of blood cholesterol also occurred, for example in pregnancy. Secondly, pathologists were concerned with the deposits of cholesterol or of cholesterol esters in the tissues, for example, those in the normal suprarenal cortex, in atheromatous intima, in inflamed kidney, and in other organs. Cholesterol inhibited the hæmolytic action of saponins. By prolonged feeding, cholesterol infiltration of tissues could be produced in rabbits, and changes were produced which had been believed to resemble pathological processes in man.

During the past 20 years chemical had been acquired more rapidly than physiological knowledge. Due mainly to the brilliant work of A. Windaus and H. Wieland, it had been shown that there was an intimate chemical relationship between cholesterol and the bile-acids, and tentative structural formulæ had been assigned to cholesterol, to the bile-acids, and to their products. Mr. Gardner gave the following scheme to illustrate the relationships between the different substances:—

(Parent hydrocarbon)	Cholestane		Coprostane
	↓		↓
(Unsaturated alcohol)	Cholesterol	⇄	Allocholesterol
	↓		↓
(Saturated alcohol)	β-cholestanol		Coprosterol
	↓		↓
(Bile-acid)	Hyodioxycholic acid		Cholanic acid and hydroxy derivatives.

In vertebrate animals the only unsaturated alcohol isolated from tissues was common cholesterol; recently it had been shown that this was generally accompanied by 1 to 5 per cent. of β-cholestanol. From the bile of different animals, on the other hand, many different bile-acids had been isolated, and when similar bile-acids were found in two species their proportions might be very different; consequently the results of animal experiments were not necessarily applicable to man.

There was little or no precise information, Mr. Gardner said, as to the functions of cholesterol in the body. In man, analyses had been made of the blood, of the excreta, and of tissues obtained post mortem. Before attempting to assess the meaning of the results of such analyses in disease, it was necessary to review the origin and fate of cholesterol in the body. From their own work and that of others up to that time Dr. Dorée and himself had some years ago formulated the following working hypothesis :—

1. Cholesterol is a constant constituent of all cells, and when these cells are broken down the cholesterol is not excreted, but is used in the formation of new cells.
2. The liver breaks down dead cells—e.g., blood corpuscles —and eliminates their cholesterol in the bile.
3. The cholesterol is reabsorbed from the intestine, probably as esters, together with bile-salts, and is carried in the blood for reincorporation in new cells. The destruction of red corpuscles is now attributed to the reticulo-endothelial system in general.

It had been shown by experiments on dogs that cholesterol was readily absorbed from the intestine and transported in the chyle. Bile-acids had the property of uniting with substances insoluble in water—e.g., fats, fatty acids, cholesterol—to yield compounds whose salts were soluble in water—the "choleic acid principle" of Wieland—thus affording an explanation of the transport of such substances through the intestinal wall. It had been shown that cholesterol could be synthesised in the body, but the seat of such synthesis had not been clearly established. In the adult more sterols were excreted in the fæces than were taken in with the food. Further, it was clear from observations on isolated portions of human intestine that sterols could be excreted into the bowel as well as in the bile. The main sterol of adult fæces was coprosterol, which was believed to be produced from cholesterol by reduction due to the action of bacteria. In milk-fed infants the fæces contained cholesterol, but not coprosterol; the stage at which the reduction to coprosterol started was not known. The influence of feeding animals with cholesterol, or cholesterol-rich diets, varied in different animals as regards the possibility of producing aortic changes. The experiments were most successful in rabbits, much less in rats and mice, and negative in dogs and cats. Mr. Gardner concluded that in man there was no real evidence pointing to any connexion between atherosclerosis and exogenous cholesterol metabolism.

BLOOD CHOLESTEROL

In about 50 healthy individuals of both sexes the total cholesterol of the fasting plasma varied from 0·08 to 0·23 per cent., of which from 60 to 70 per cent. was in the form of esters. There was no such thing as alimentary hypercholesterolæmia *after a meal*; the plasma cholesterol sometimes rose and sometimes fell during the hours succeeding the meal. At the same time prolonged feeding with diets of high cholesterol content eventually raised, and of low cholesterol content eventually lowered, the pre-breakfast level of the plasma cholesterol. Some cases of pregnancy showed an increase of the total cholesterol, and many more exhibited variations in the ratio of free to ester cholesterol.

In uncomplicated cholelithiasis without jaundice there was no hypercholesterolæmia, and the ratio of free to ester cholesterol was normal. With biliary obstruction there was generally a fall in the ester cholesterol; the same picture was found in subjects with biliary fistulæ; it looked therefore as though the absence of bile from the intestine in both groups reduced the absorption of sterols, and so lowered the ester cholesterol content of the plasma. In a minority of cases with cholelithiasis and obstructive jaundice there was hypercholesterolæmia, with an increase of both free and ester cholesterol; the explanation of this was not clear. The hypercholesterolæmia of nephrosis might reach as much as 1 per cent. total cholesterol, and the ratio of free to ester cholesterol varied in either direction. Its cause was not known, but it might be related to the disturbance of the plasma proteins. The total cholesterol of the plasma might also be raised in myxœdema. In both myxœdema and nephrosis the basal metabolic rate was lowered, but it was not fair to regard the blood cholesterol as inversely proportional to the basal metabolic rate, because in hyperthyroidism the increased rate was accompanied by a normal plasma cholesterol.

Mr. Gardner concluded by referring briefly to the histological study of pathological deposits of cholesterol esters in tissues, as in chronic nephritis, Niemann's disease, atherosclerosis, and xanthoma. Some of these deposits were attributed to hypercholesterolæmia, but others were not associated with an increase of the blood cholesterol. Conversely, the hypercholesterolæmia of nephrosis did not lead to xanthomatous deposits.

EXPERIENCE IN FREIBURG

Prof. **Ludwig Aschoff** spoke particularly of vascular disease. The anisotropic droplets in the intima of pathological vessels definitely contained cholesterol esters. In atheroma of the aorta fats, phosphatides and cholesterol compounds were all in excess; but the last group of compounds were in greatest excess; the other two groups were not of much importance. The deposition of lipoids occurred first at the boundary between intima and media, probably in the cementing substance between the elastic fibres. The deposits then increased and spread towards the lumen of the vessel. Deposits in the media occurred later, and started at those points where the elastic fibres were loosely knit. It used to be thought that the changes were essentially intracellular, but nowadays atheroma was regarded as an imbibition process, the lipoids being derived from the blood plasma.

Changes in the vessels began in early childhood. The special pictures observed at different stages were due to the superimposition of special circumstances at the different stages of life. Thus in early life the picture was one of simple imbibition of lipoids. In later life there was in addition a reactive hyperplasia of the intima. Such factors as wear and tear, necrosis, and calcification were also added with increase of years. It was tempting to speculate on the main influences at different ages. Thus might the high cholesterol content of milk be responsible for vascular changes observed in babies? Was the atheroma of puberty due to a disturbance of the ductless glands? Was the atheroma of adults due to dietetic influences, possibly superimposed on changes produced as suggested at earlier ages? Special cases might be affected by special additional factors—e.g., the hypercholesterolæmia of diabetes. Particular caution was necessary in interpreting the results of feeding rabbits with cholesterol when attempting to explain pathological changes in the vessels of man. He favoured the view that atherosclerosis in man was a form of "cholesterol gout," a metabolic disease not necessarily due to any gross changes in the chemical composition the blood. Finally, Prof. Aschoff reminded his eners of the great importance of mechanical factors .g., the blood pressure, the effect of stretch and ss, the influence of weak spots in the walls, of ves, and the strain at points of branching, &c.—determining the localisation of atheroma.

)r. R. SCHOENHEIMER pointed out that cholesterol osition in the tissues of normal man by prolonged ding with cholesterol was impossible, owing to the ans available for its ready excretion. Such position might occur, however, if excretion of sterols s restricted. He presented most interesting experi-ntal results of a comparison between the sterol ntents of normal intestine and of isolated loops of t. Cholesterol was excreted into the normal bowel; me of this was reabsorbed; some was converted to coprosterol and β-cholestanol, neither of which uld be reabsorbed. In the isolated loop much cholestanol but little cholesterol was found. He d been able to extend his investigations to a case xanthomatosis of the tendon sheaths in man. The itial hypercholesterolæmia (some 850 mg. per 0 c.cm.) was due mostly to the ester form; it was duced to about 300 mg., with a normal free to ester tio, by a purely vegetable diet (which contained ly plant sterols, which were not absorbed). He was t able to say where the cholesterol of the blood had one; it was certainly not excreted. This patient had creted very little sterol even on a full diet; it was robable that her hypercholesterolæmia was due to diminished fæcal excretion; it was worth while xamining other cases of hypercholesterolæmia for npaired excretion, and when that was found adopting reatment by a vegetable régime. He regarded these ases of cholesterol deposition as analogous to gout, n that the abnormal metabolism was due to a failure f excretion.

DISCUSSION

Dr. S. C. DYKE (Wolverhampton) discussed lipoid splenomegaly, which he regarded as due to a saturation of the reticulo-endothelial cells with lipoids. This might be due to a failure of excretion, or be congenital. He described the three main groups, Gaucher's disease, in which cerebrosides (kerasin or phrenasin), Niemann-Pick's disease, in which phosphatides (especially lecithin), and the Schüller-Christian syndrome, in which cholesterol was found in the deposits. He regarded all these as congenital in origin, and contrasted them with acquired lipoid splenomegaly, such as that due to the hypercholesterolæmia of diabetes or biliary obstruction.

Dr. J. W. MCNEE (London) dealt with some of the aspects of biliary disease, and pointed out in particular how greatly our knowledge of these diseases was held up by lack of a simple method for estimating bile-acids.

Dr. H. GAINSBOROUGH summarised the main causes of hypercholesterolæmia. Dr. J. M. H. CAMPBELL dealt with some clinical aspects of cholelithiasis and atherosclerosis, and Dr. J. D. ROBERTSON read a paper for Prof. E. C. DODDS, in which it was pointed out that in nephrosis the hypercholesterolæmia did not run strictly parallel with the degree of œdema. Further, it had been observed in cases of ascites, that though the plasma proteins fell after tapping the abdomen, the blood cholesterol did not rise.

Prof. ASCHOFF answered points which had been raised, and Dr. SCHOENHEIMER recounted a case of nephrosis in which marked atherosclerosis was found, thus negativing the general belief that intimal changes did not occur in this disease. Further points were discussed by Prof. M. J. STEWART, Dr. CECILIA SHISKIN, Dr. W. W. KAY, and Dr. DAM (Copenhagen)

REVIEWS AND NOTICES OF BOOKS

uantitative Clinical Chemistry

Vol. II. *Methods*. By JOHN P. PETERS, M.D., M.A., Professor of Internal Medicine, Yale University School of Medicine; and DONALD D. VAN SLYKE, Ph.D., Sc.D., Member of the Rockefeller Institute for Medical Research. London: Baillière, Tindall and Cox. 1932. Pp. 957. 52*s*. 6*d*.

THE first volume of this work showed that one of the most ambitious attempts of recent years was likely to be successful. To summarise quantitative clinical chemistry in two volumes is an achievement indeed. Since one of the authors, Dr. Donald van Slyke, has succeeded during the past 20 odd years in making a quantitative series of biochemical methods out of what had hitherto only possessed the merest shadow of mathematical exactitude, no better collaborator on the biochemical side could have been chosen. Indeed the whole development of the manometric technique for the measurement of the concentration of the ordinary constituents of blood and urine has been achieved almost solely in the laboratories of the Rockefeller Institute.

The first chapter containing some 50 pages deals with the general methods employed in quantitative biochemical analyses. It might seem superfluous in a volume of this character to start with a description of balances, measuring flasks, and burettes; but so much information is compressed in a short space that there can be little doubt that it was worth while. One of the most interesting parts of this chapter deals with the importance of accurate calibration of volumetric apparatus. It is pointed out that the accuracy of graduation necessary for ordinary work is plus or minus 0·1 per cent., and moreover that liquids different in specific gravity and surface tension cannot be delivered with the same accuracy by a pipette graduated in terms of water. Whilst this fact is self-evident, its emphasis is of the utmost value. A very good description of micro-volumetric apparatus and a particularly useful account of the Rehburg burette and the use of this instrument in micro-titration is supplied. The preparation of standard solutions is also discussed and exact directions are given for the preparation of standard hydrochloric acid, while the principles of colorimetry and nephelometry are outlined.

The second chapter is concerned with special biochemical methods and deals with the collection of samples. The technique of arterial puncture, the collection of arterialised venous blood, and venous puncture are well described. A valuable part of this chapter deals with the anaerobic handling of blood; this is very complete and will enable the investigator to collect blood anaerobically and centrifuge it. The third chapter deals admirably with gas analysis, including the newer methods of analysis by the manometric van Slyke apparatus. There follows a series of chapters on respiratory metabolism, alveolar air, and blood volume. The remaining chapters concern the determination of the constituents of blood, urine, and fæces, and wherever possible a colorimetric, manometric, and volumetric method has been given. The methods described have been selected with the greatest discrimination and criticism of the judgment of such authors would seem almost impertinent. We make a few plaintive suggestions in the hope that in future editions the authors will lighten our darkness on certain problems which they have not touched. For example, the determination of iodine in blood or other body fluids and tissues is not discussed—a subject of great importance which has attracted world-wide interest during the past few years. Nor is there any mention of enzymes. The determination of diastase and phosphatase are matters which occupy a good deal of the time of the biological chemist associated with clinical routine work. We should welcome the opinions of Dr. Peters and Dr. van Slyke on the relative values of a multiplicity of methods.

Any clinician or clinical biochemist who intends to publish a book or a paper should first consult this volume in order to see whether he can really advance the subject beyond the point to which the authors have already taken it. The volume will remain a permanent monument to the workers at the Rockefeller Institute.

Die konservative Behandlung entzündlicher Genitalerkrankungen der Frau

By Priv.-Doz. Dr. GUSTAV DÖDERLEIN. Leipzig: Georg Thieme. 1932. Pp. 117. M.6.50.

THIS small volume is one of an excellent series which is distinguished by the attention paid to treatment. The conservative treatment of inflammatory lesions of the female genitalia affords ample scope for the keen therapist, and extremely good results are often obtained. Practitioners should derive great help from a study of this book, for they will find most of the available methods adequately described. Particularly useful are the sections dealing with vulvitis, pruritus vulvæ, and gonorrhœa. The paragraphs in small print deserve careful study, for they indicate clearly the modern views on the pathology of the lesions. The younger Döderlein, ho has written this book, is now Oberarzt under of. G. A. Wagner at the Charité, Berlin. He seems have inherited the ability to record concisely the clinical experience of the German school.

Constitution-Types in Delinquency

By W. A. WILLEMSE, M.A., Dr.Phil., Lecturer in Psychology, University of Pretoria. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1932. Pp. 266. 15s.

THE work of Kretschmer has opened up a new field for work in psychiatry. Hitherto it might be said that apart from the established organic psychoses such as general paresis, alcoholic psychosis, post-encephalitic delinquency, and senile dementia, little has been done to correlate the reaction types with the physical peculiarities of the patients. True, Lombroso and his followers had marked off the alleged stigmata of degeneration, but constitution manifest in physique had never been closely studied before Kretschmer had suggested that pyknic, asthenic, and athletic physiques were correlated with manic-depression, schizophrenia, and epilepsy respectively. Many psychiatrists have found this correlation useful, and physiological undercurrents have been speculated upon to explain the emergence of these reaction types on the basis of endocrine polarities. But most maintain a receptive critical attitude without committing themselves to the dangers of water-tight compartments. Dr. Willemse has ventured to extend the Kretschmer classification to the study of criminal types. He does so with a wealth of clinical material but with an equal poverty of statistical verification. His descriptions of physical types are clear and suggestive, and his descriptions of the mental make-up of cycloid, schizoid, and epileptoid subjects is entertaining and instructive. But the descriptive clinical material based upon fairly ill-defined mental characters is difficult to correlate against equally descriptive types of physique. He does not, however, neglect intermediate forms nor the importance of dysplasia for delinquency, and his references are rich and well considered. The subject is still in the descriptive stage, but because of its novelty and suggestiveness, and for the bridge it builds between the physical and the mental, the book is welcome, and deserves to be studied for its own sake and to stimulate further research.

Human Pathology

Third edition. By HOWARD T. KARSNER, M.D., Professor of Pathology, Western Reserve University, Cleveland, Ohio. London: J. B. Lippincott Company. 1932. Pp. 1012. 45s.

IN its third edition this useful text-book has been carefully revised and new sections have been added on œdema, shock, rheumatic fever, and diseases of the teeth; the last is from the pen of Prof. Thomas J. Hill and forms a welcome addition to a pathological text-book. The sections on Bright's disease and endocarditis have been very largely rewritten in accordance with recent teaching. A useful feature is the list of references appended to each chapter; some older references have now been removed and 600 new ones have been added. We are glad to note that the author has resisted any temptation to enlarge the book; this edition contains only some 30 pages more than the last, and the volume as a whole is still one of the most compact, yet complete, text-books available.

British Journal of Children's Diseases

IN the July–September number (vol. xxix.) Dr. D. D. Payne records observations on 274 children who attended the Royal Waterloo Hospital Rheumatism Supervisory Centre between January, 1931, and March, 1932, giving statistics of familial incidence, social environment, relation to tonsillitis, chorea, and carditis, followed by an account of the methods of diagnosis and treatment carried out by his centre and details of a cardiac efficiency test.—In a paper on the Erythrocyte Sedimentation Rate in Juvenile Rheumatism, Dr. N. Gray Hill describes his method which is a modification of that of Fahraeus, with an account of eight illustrative cases. He holds that if the rate is below 10 : 20, active rheumatism other than chorea is not present and there is no real necessity for hospital treatment, whereas if the readings are above 10 : 20 the indications for rest in bed and more careful observation are increased.—Dr. Edward Podolsky, of Brooklyn, New York, contributes a paper on Calcium Therapy in Pædiatrics, and Dr. Norman D. Begg records a Ward Outbreak of Erythema Nodosum, which occurred in a ward containing 12 children, all under 6 years of age, convalescent from whooping-cough. In each case the Mantoux reaction was strongly positive, and X ray examination of the chest showed a slight increase in the root shadows, suggesting some degree of hilar gland infection.—Dr. Hazel H. Chodak Gregory describes Two Cases of Melæna Caused by Innocent Growths of the Small Intestine in girls aged 5 and 8 years respectively. In both cases the intestinal hæmorrhage gave rise to severe secondary anæmia. Recovery followed removal of the growths in each case.—Prof. Amir Chand, of Amritsar, reports a Case of Mongolism in India, which is apparently the first on record.—The abstracts from current literature are devoted to dermatology and syphilis.

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THE LANCET

LONDON: SATURDAY, SEPTEMBER 10, 1932

INFECTION WITH BRUCELLA ABORTUS

IT is now becoming fairly clear that man may become infected with *Brucella abortus* from two main sources—milk and direct contact with animals. Since, according to the most recent observations, 20–40 per cent. of the mixed milk-supplies in towns not practising pasteurisation contain living *abortus* bacilli, and since a high proportion of our herds of cattle are infected, the question is often asked why undulant fever is not more common in this country than it appears to be. Even admitting that only a fraction of the cases are correctly diagnosed, and that the number of reported cases affords but a poor index of the true incidence of the disease, there is still a serious discrepancy between the frequency with which human beings are exposed to infection and the frequency with which they develop clinical symptoms of infection. The answer seems to be that infection with *Br. abortus* resembles in many respects infection with the tubercle bacillus. We know that 6·4 per cent. of the mixed milks of this country contain living tubercle bacilli of the bovine type, and we know that only a small proportion of those consuming this milk develop clinical tuberculosis. The evidence of the tuberculin test, however, shows that latent infections, either with the bovine or the human type of bacillus, are extremely common. Most of these latent infections give rise to little or no trouble, and only a small proportion of them progress to the stage of becoming clinically manifest.

If the analogy with tuberculosis is correct, latent infections with *Br. abortus* should likewise be common, and this, in fact, appears to be so. The evidence obtained by examining Wassermann sera indicates that latent infection resulting from the ingestion of raw milk may often be encountered, especially in the first 20 years of life. With regard to infections by direct contact, the evidence is even more conclusive. A. THOMSEN,[1] in Denmark, found that veterinary surgeons working with infected cattle frequently had antibodies to *Br. abortus* in the absence of any history of undulant fever. Prof. J. H. DIBLE and Dr. MARGARET POWNALL[2] at Liverpool have now brought evidence to show that much the same holds true of men engaged in slaughtering animals and dressing meat. Of 100 slaughterers examined, 12 had an agglutination titre of 1/40 or over to *Br. abortus*, while of 100 control males of the same age-groups only 2 reacted at this titre. Particularly interesting was their observation that antibodies were absent from those men engaged in slaughtering pigs, but were present in those dealing with cattle and to a rather less extent with sheep. In view of the fact that contagious abortion has never been observed in pigs in this country, the negative results in pig-slaughterers lend additional weight to the thesis that antibodies in the blood to a titre of 1/20 or 1/40 are the result of actual infection with *Br. abortus*. The positive results in a number of slaughterers of sheep suggest that these animals may be infected with an organism of the brucella group, and they clearly demand further investigation.

While those in actual contact with animals may perhaps be infected through the skin, it is usually assumed that townspeople and milk-drinkers generally are infected through the alimentary tract. The theory is that when the bacilli are ingested in milk or cream, they are swallowed, pass through the stomach, and are apt to find their way through the wall of the intestine and so reach the mesenteric glands. Another route, however, is possible—namely, through the tonsil. In support of this C. M. CARPENTER and RUTH A. BOAK[3] at Rochester, New York, have recently adduced some interesting evidence. Fifty-six pairs of tonsils removed from children and adults for various causes were examined culturally and by guinea-pig inoculation, and in eight of them *Br. abortus* was demonstrated. Except for one patient who lived on a dairy farm and about whom exact information was unobtainable, all the positive cases had drunk raw milk known to contain *Br. abortus*, though only one patient was actually suffering from undulant fever at the time. CARPENTER and BOAK suggest that the organism may invade the tonsil and multiply or accumulate there until the resistance of the host is sufficiently lowered by fatigue or disease to permit of its invading the blood stream. How common primary invasion of the body via the tonsil may be it is impossible to say; it will be remembered that this route of entry has also been claimed for the typhoid bacillus, though the balance of evidence—especially that obtained from the experimental study of mouse typhoid—is against it. Before coming to any decision it would be necessary to make a comparative examination of the tonsils and mesenteric glands of raw-milk drinkers coming to autopsy. Some large hospital in a provincial town in which pasteurisation is exceptional might well make this a subject of inquiry.

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MORAL AND MATERIAL PROGRESS

THE British Association for the Advancement of Science was born in York 101 years ago. Its objects were "to make the cultivators of science acquainted with each other, to stimulate one another to new exertions, to bring the objects of science more before the public eye, and to take measures for advancing its interests and accelerating its progress"—an admirable summary of the ideals which have, with so much benefit, led to the founding of the innumerable learned societies which have arisen during the century. We doubt whether medical men affect the meetings of the Association as much as they might. They have at any rate the advantage that doctors can there meet many interesting people with whom they would be unlikely to come into contact elsewhere and that there is no section of medicine or pathology or hygiene, nothing indeed of a more professional complexion than the section of physiology, and even this was omitted this year in view of the international gathering at Rome. The doctors therefore are free from obligations and can wander at will to papers and discussions on archæology or zoology or economics or what not for edification rather than instruction; they will also find well-organised facilities for entertaining excursions.

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[1] Jour. Infect. Dis., 1931, xlviii., 484.

[2] Jour. Hygiene, 1932, xxxii., 349.

[3] Jour. Amer. Med. Assoc., July 23rd, p. 296.

The present meeting at York—the fifth to be held in that splendid city—opened on August 31st with the presidential address by Sir ALFRED EWING, the veteran leader of scientific engineering, and though he made no direct reference to our immediate interests his words are worth some consideration by those who care to reflect on the broader aspects of medical practice. As might be expected, he celebrates particularly the sweeping pageant of discovery and invention which he has watched go by in his own experience and which has led man to a control of his material environment no one could have dreamed of when the President attended his first meeting of the Association 65 years ago. The miraculous has progressively become the commonplace, human life thereby has become richer, fuller, wider, healthier, and time and space have been so far abolished that the whole world is now in closer contact than Edinburgh was with Inverness 100 years ago. The pageant must needs have moved the wonder and admiration and delight of anyone who had eyes to see it. But Sir ALFRED goes on to two comments which really contain the pith of his address. Uncertainty, he says, is now replacing the cocksureness of the Victorian spokesmen of science who used to think that there was somewhere a finite explanation of the world to which the progress of knowledge would inevitably lead. This quest of truth has gone on ceaselessly and it has brought us now to doubt whether there is any truth to find more final than the steps which open up fresh questions. We discover new relations between observed phenomena, but the nature of what is found to be related continues to evade our comprehension. Relationships are apparently the only kind of discovery which we can make; we see more clearly where the procession is and it becomes more inclusive, but we do not now know where it is going to. The nature of things becomes more and more incomprehensible, and the procession becomes more and more absorbingly interesting by our very realisation that it can never reach a goal. And to a stimulating statement of this great truth Sir ALFRED adds some rather gloomy reflections. Admiration is, he says, now tempered with criticism, complacency gives way to doubt, doubt passes into alarm. Where are we going to? The engineer has showered over the earth an unimagined wealth of capacities and powers which has made for such happiness as material things may secure. But his gifts may be abused and the President goes so far as to say that ethically and morally man is not fit for the responsibilities which his material progress involves.

While it is true that man is never morally fit we venture to think that Sir ALFRED underestimates the ethical progress which has been made since the British Association was founded, and that if he had had more contact with biology he would not be so pessimistic about man's capacity to meet effectively any situation which may arise. He has been used to machines which need outside intervention if their hurts are to be healed, which work only under limited conditions and which have no power to adapt themselves to their surroundings. The tale which biology tells is far more cheerful; we see everywhere self-regulating adaptable organisms which evade and surmount their difficulties and fit themselves to what they find about them. The great lesson of the postmortem room is not that man often fails to carry on his life, but that the body faces overwhelming troubles with a cheerful courage which keeps many an active spirit alive for years in a carcass which is irretrievably maimed. The biologist will have few qualms about man's suitability to play his part in a world which he has himself transformed. Sir DANIEL HALL has watched the same pageant as Sir ALFRED EWING but from the agriculturalist's standpoint: "righteousness," he says in a striking essay,[1] "is just as much a quality of the human mind as intelligence. Both are fitful in their operations, irregular in their distribution, and unequal in their intensity. I hold that both are growing in the human race from generation to generation, and this again I maintain to be a fact of observation, dependent on no assumptions of how or why." The fearful may well take fresh courage.

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THORACOPLASTY IN PULMONARY TUBERCULOSIS

THE most important part in the treatment of chronic pulmonary tuberculosis is the treatment of cavities. There is always hope for the tuberculous lung which is free from these incubators which might have been designed by nature for the breeding of tubercle bacilli. The closure of a cavity means much more than the closing of an ugly gap in an essential organ; it implies a substantial reduction of the attacking forces. By the time that the lungs are the seat of chronic tuberculous disease the period of hæmatogenous infection has probably passed and we can aim at local victory with some hope of permanent cure. The types of cavity associated with early infiltration often heal spontaneously if the patient by taking to his bed relieves the lungs of the extra work necessary for active life. Cavities of a slightly more resistant type will often yield to pneumothorax treatment. Basal cavities may close as the result of a timely phrenic avulsion. Such closure of cavities results in amelioration of symptoms, reduction of expectoration, the disappearance of tubercle bacilli, and the healing of diseased tissues. These beneficent results, however, are only possible if the pleura is free from adhesions of the type which, either because of their situation or size, prevent adequate collapse of the lung and maintain the patency of cavities.

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[1] Fortnightly Review, December, 1931.

The division of adhesions which are preventing a satisfactory collapse of the lung may convert an inefficient into an efficient pneumothorax. Much progress has been made since JACOBAEUS devised his endoscope for the direct inspection of the pleural cavity and a cautery for severing adhesions. The employment of a high-frequency current to coagulate tissues before cutting with actual cautery or diathermic knife has lessened the danger of hæmorrhage and some at least of the difficulties formerly encountered in this very delicate operation have been obviated. But the division of adhesions is often impracticable either because of their situation, or because they contain pulmonary tissue, or because the lung itself is adherent to the chest wall. When internal pneumolysis is impossible, external pneumolysis is the only alternative to an expectant policy that in many cases might almost be termed a policy of despair. But it should never be forgotten that the results of thoracoplasty are irrevocable, that the operative risks are grave, and that it often fails in its object. A valuable review by BÉRARD and DELGOFFE[1] describes how certain of these risks may be avoided and emphasises the necessity of careful collaboration between physician and surgeon at all stages of treatment. It would be unfair to condemn any method of treatment because it is not always successful, or to judge of results from a limited number of cases: no doubt many lives have been prolonged and some lives have been saved by thoracoplasty; but the physician who recommends the operation shoulders a heavy responsibility. Those whose candour compels them to report operative failures have been termed "crêpe-hangers." At the risk of joining that lugubrious company we must confess that the extremely favourable returns published from time to time by thoracic surgeons are less impressive than the results of operative interference seen not as statistical percentages but as tragic realities in the post-mortem room.

Though artificial pneumothorax is the best method of treatment for the varieties of tuberculosis which demand active intervention, it leads to permanent cure in only a proportion of the patients treated. The risks attaching to it are however small, the patient suffers no pain and little inconvenience, and at any stage in the course of treatment the lung can be permitted to re-expand. Thoracoplasty produces a less effective collapse than a successful artificial pneumothorax: the mental distress caused by an operation that usually necessitates two and sometimes more visits to the operating theatre must be severe; the physical suffering after operation is often acute; and a successful result can never be guaranteed. A distinguished American physician who visited Europe last summer explained that the object of his coming was to find out "why his thoracoplasties died." He added that neither in Berlin nor in London was any satisfactory reply forthcoming. Improvements in the technique of partial thoracoplasty and apicolysis may enable us to dispense with the more radical methods and reduce operative risks, but it does not seem likely that surgery tried, found wanting, and abandoned in the treatment of tuberculosis of bones and joints should prove more successful in the thorax than it has in the limbs and spine. It is distressing when a patient succumbs in spite of our efforts, but it is much more distressing when a patient dies because of our efforts. When disaster occurs the physician cannot blame the surgeon. It is the operation rather than the operator that has failed—an operation usually undertaken on the advice of the physician. Desperate diseases may demand desperate remedies, and when nature fails to cure we must perforce employ art. But a natural cure is always to be preferred to an artificial one, nor should we forget that for every patient saved by our crude therapy nature cures a thousand by means too subtle for our heavy understanding. It is for this reason that statistics so often fail to convince. We know that the majority of patients survive the operation of thoracoplasty. What we need to know is how many lives are saved by thoracoplasty which would otherwise have been lost. It is noteworthy that the type of disease considered most suitable for this operation, the proliferative type occurring in the post-adolescent years, is the type which tends to pursue a chronic course without special treatment and is subject to prolonged remissions. Despite the admiration which the persistence, skill, and courage of the small band of thoracic surgeons rightly evoke, the physician will serve neither the cause of medicine nor the interests of his patients unless he views their work with a critical eye.

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THE Secretary of State for Scotland has appointed Dr. James Law Brownlie to be chief medical officer of the Department of Health for Scotland in succession to the late Dr. John Parlane Kinloch. Dr. Brownlie, who graduated at Glasgow in 1913 and obtained the M.D. (with commendation) in 1918, is at present one of the medical officers of the department and has been engaged on the coördination of hospital services in Scotland. He has represented the department on various scientific bodies and committees, and throughout his period of service has worked in close association with the late Dr. Kinloch. His previous experience included posts as resident medical officer in the Glasgow corporation fever hospitals, as assistant bacteriologist in the Glasgow corporation laboratory, and as bacteriologist and pathologist to the county of Lanark.

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[1] Bérard, L., and Delgoffe, A.: Onze années de pratique de la thoracoplastie dans un service hospitalier urban. Arch. Méd.-Chir. de l'App. Resp., 1932, vii., 1.

ANNOTATIONS

HIGH MATERNAL MORTALITY

In the final report of the Departmental Committee of the Ministry of Health on Maternal Mortality and Morbidity, reviewed recently in our columns,[1] attention was drawn to certain areas of England and Wales in which the risks of childbirth have for many years been appreciably above the average for the whole country. The details of the investigations from which this information was supplied have now been published as a separate report (No. 68 in the Ministry of Health's series on public health and medical subjects).[2] The areas studied were certain industrial towns in the West Riding of Yorkshire, the county of Lancashire, and ten counties of Wales. It had been observed for many years that an exceptionally high maternal death-rate prevailed in these areas, and reference has been made to it previously in various official reports. It was considered, however, that a somewhat more detailed investigation was desirable to ascertain whether fresh light could be thrown upon the causes of maternal mortality, whether the maternity and child welfare organisation was adequate, and, if so, why it had apparently failed to secure an improvement in the maternal mortality-rate. The inquiry was directed by Dame Janet Campbell, M.D., who herself studied conditions in the Yorkshire towns. Dr. Isabella Cameron and Dr. Dilys Jones were responsible for the inquiries made in Lancashire and in Wales respectively.

In Yorkshire's industrial towns it was noted that the high death-rate was due mainly to "other causes" rather than to puerperal sepsis. This naturally suggests an exceptional incidence of difficult or abnormal midwifery cases. The death-rates for both stillbirths and neonatal deaths were also above the average, which indicates that the excess of abnormal midwifery arises from those causes which may injure the child besides increasing the maternal risk—e.g., toxæmia, hæmorrhage, difficult labour due to disproportion or any cause likely to lead to premature birth. The report is unable to lead us any nearer to an explanation of this excess. It existed under pre-war conditions of comparative plenty. It is still present in times of wider unemployment and poverty. It cannot, it is concluded, be wholly accounted for by any outstanding characteristic common to all the areas, or by any local custom such as the employment of married women in the mills. Dame Janet Campbell suggests that much of the difficult midwifery is caused by disproportion between the size of the pelvis and the head of the fœtus, but it is not easy to see why this factor should have so distinctly local a distribution. In fact, the localisation of the high maternal death-rate to certain districts in Lancashire leads Dr. Cameron to reject the explanation that there is involved a question of race and consequent small pelvic development. She concludes, from her examination of the causes of maternal death in the county, that rickets is not a factor of the first importance. As in the Yorkshire towns, there is no conclusive evidence that the employment of women in factories, either before or after marriage, has a direct effect on the loss of maternal life at childbirth. Although it is true that the general experience is that the rate tends to be high in the cotton textile towns, Lancashire towns with the highest maternal mortality-rates are not exclusively those in which women are employed to a large extent in factories, while some towns with relatively low rate have much industrial employmen of women. Most of the local authorities, it is shown have established well-considered schemes for matern welfare, but many of these, Dr. Cameron believe fail in their full effect because they are insufficientl utilised. In the Welsh counties considered b Dr. Dilys Jones, on the other hand, it is conclude speaking generally, that the facilities provided for th care of maternity cases are far from adequat Comparatively few authorities have establishe antenatal clinics or made other arrangements for th routine medical examination of expectant mother Even recognising the financial and geographic difficulties in rural areas, it is felt that more adequat provision could be made, though, here also, due advan tage is not taken by the mothers of those maternit services which are provided. Another factor con sidered by Dr. Jones is the use of forceps. Statistic derived from the birth inquiry cards of health visitor or from the registers of midwives suggest that forcep are applied with unnecessary frequency. It is almos impossible to secure reliable information on th incidence of abortions, but the impression is state that there is a considerable amount both in the rura and the industrial parts of Wales, and that the practic of procuring abortion is increasing, probably owing t economic conditions.

From this summary it is clear that no new o outstanding causes of maternal mortality have bee discovered. But the report places in their prope perspective many factors which have been held t contribute to a high maternal death-rate. Succes can only be obtained by simultaneous progress i several different directions. Among these, in Dam Janet Campbell's opinion, must be included (1) th creation of a better informed public opinion in matter relating to maternal welfare ; (2) the maintenance o a healthy environment through infancy, childhood and adolescence ; and (3) the supply of the obstetri requirements of an adequate maternity service including antenatal supervision, skilful midwifery and postnatal care. The ultimate solution, the repor concludes, will come only through the gradual establishment of a higher standard of ordinary clinica midwifery practice, while the better physical conditio of the growing population should in time contribut materially to an improvement.

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[1] THE LANCET, 1932, ii., 351, 360.

[2] H.M. Stationery Office. 1932. Pp. 96. 1s. 6d.

IRRIGATION AFTER PROSTATECTOMY

Sepsis after prostatectomy is nowadays receivin much attention, and urologists are making greate efforts to reduce this serious factor in mortality Dr. John Morton,[1] consulting surgeon to the Roya Prince Alfred Hospital, Sydney, points out tha catheter drainage of the prostatic cavity is unsatisfactory because of blockage of the catheter. T prevent it a large-sized catheter must be employed and this the urethra does not tolerate gladly. T overcome the difficulty, he recommends the use of a temporary drain through the perineum. A small midline incision is made in the perineum behind the bulb. Guided by two fingers of the left hand passed into the bladder from above, a closed clamp is pushed through the perineal incision into the prostatic pouch. The track is then dilated by opening the clamp, and a perforated drainage-tube is afterwards pulled through it and fixed so that one extremity lies in the prostatic cavity and the other outside the perineum. At the same time a fine irrigating tube is drawn up through the urethra and fixed to the bladder extremity of the perineal tube. By means of these tubes continuous irrigation can be carried out, the fluid entering through the urethral and leaving through the perineal tube. When the wash-outs are quite clear, both tubes are withdrawn.

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[1] Med. Jour. of Australia, June 4th.

Mr. Andrew Fullerton, of Belfast, has already described a method of perineal drainage for septic cases, but Morton's has the advantage of providing for continuous irrigation.

BLOOD CHANGES AFTER IRRADIATION

THE inquiry instituted on behalf of the X Ray and Radium Protection Committee into the blood changes recorded in workers in radiological departments of various hospitals should provide useful data if the response to the questionnaire issued is satisfactory. The evidence will be collected this month and reviewed in October. Since the incidence of fatal cases of aplastic anæmia first drew attention to the development of blood changes elaborate screening precautions have been devised for the protection of workers, and stringent conditions for the storage and handling of radium have been laid down. It has moreover been the practice to insist on a holiday for those handling radium when the lymphocytes have fallen below normal limits, even though the health of the worker may be apparently unaffected. Lymphopenia is the accepted criterion of unequivocal damage, but it is possible that as a result of this inquiry a reliable danger signal will be found at a much earlier stage—for example, in the eosinophilia which accompanies the preliminary rise of the cellular content of the blood where blood counts have been charted for each affected individual over a prolonged period. It is more probable, however, that the inquiry will show that blood changes are so rarely encountered that the periodical blood counts previously recommended will be necessary only for those who come in close and frequent contact with radium or X rays. The answers to the questions should elicit from each hospital the proportion of those cases (if any) in which alterations of the blood have occurred to the total number of workers examined; records of typical blood counts in affected cases with details of the worker's occupation; and duration of service as well as notes on treatment. It is however through charts of consecutive blood counts on the same affected individual that most useful information on prophylaxis is likely to be obtained; in radium workers at least these may be found to follow if unchecked a typical curve, though the period during which the changes manifest themselves may vary greatly. In X ray workers Dr. Ch. Aubertin[1] described twenty years ago two types of count in radiologists and radiographers who had been at work from ten to fifteen years: in one type the leucopenia was chiefly of polymorphs and in the other there was a relative excess of polymorphs with eosinophilia. The treatment has hitherto been removal from contact with radium or X rays for a time. In the absence of any established form of specific therapy for aplastic anæmia it is difficult to suggest any other or to hazard an opinion how often the sequence of blood changes and holidays can safely be permitted. Fortunately, even in hospitals where nurses are constantly in attendance upon patients under treatment with radium, the proportion of those affected is believed to be very small, and in general hospitals where a change of personnel occurs every three months the chance of damage to the hæmopoietic system is probably negligible. But this circumstance should not produce a complacent attitude with regard to the questionnaire, for the need of further definite information is apparent. Sir Humphry Rolleston, reviewing blood counts in X ray workers in a critical review of the harmful effects of irradiation (X rays and radium) published last year,[2] pointed out that the blood picture seen after exposure to irradiation for long periods may differ from that obtained experimentally by one or a few X ray exposures, and that this might be considered to correspond with Warthin's observation that the bone-marrow becomes affected later than lymphoid tissues. He drew attention also to the conflicting observations on blood changes, which the information now sought may help to resolve.

THE ABORTIVE TREATMENT OF GONORRHŒA

PRINCIPLES to guide those prepared to attempt the abortive treatment of early gonorrhœa are laid down by Dr. Hansteen in the *Norsk Magasin for Laegevidenskaben* for August, 1932. The treatment should not be attempted if the infection has existed for more than six days, or in the presence of signs of severe irritation, with swelling and tenderness about the orifice of the urethra. The criterion by which he judged the results of his treatment was the disappearance or persistence of gonococci after the first examination. Among the patients with a first attack of gonorrhœa. dating only two to four days back, there were 12 successes and 12 failures. Among the patients whose infection dated five to six days back, there were 13 successes and 8 failures. A second group of patients included those who had previously had gonorrhœa once or twice. In this group among those whose infection dated only two to four days' back, there were 68 successes and 19 failures; among the patients in the second group whose infection dated five to six days back, there were 35 successes and 27 failures. Taking all cases together, 194 courses of abortive treatment yielded 128 successes and 66 failures. This by no means negligible measure of success was achieved by a comparatively simple ritual: thorough preliminary irrigation with 1 in 4000 permanganate of potash, followed by 2 per cent. protargol for five to six minutes, and finally treatment of the first 3 or 4 cm. of the urethra with pure protargol powder. The patient was instructed to give himself three injections of a 1 per cent. solution of protargol on the next day. The results were checked 10 to 12 days later. Though micturition provoked some burning on the first day, the patients willingly submitted to this treatment in order to achieve a rapid recovery, and in no case did a stricture or other serious trouble supervene. In this connexion it is of interest to recall that when some months ago the candidates for the vacant chair of skin and venereal diseases in Copenhagen had to deliver addresses on subjects chosen by themselves, one of the candidates, Dr. Svend Lomholt, chose as his subject the injection treatment of gonorrhœal urethritis in men, and he raised the question whether injections are useful in the treatment of uncomplicated gonorrhœa in men. Although his clinical experiences led him to answer this question in the affirmative, he held that convincing statistical evidence of the effectiveness of treatment by injections is lacking. In the absence of controls Dr. Hansteen's figures might not be acceptable to statisticians, but it seems unlikely that a consistently negative bacterial report would be obtained in so short a period after untreated attacks of proved gonorrhœa.

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[1] Arch. d'électr.-médicale, 1912, xx., 150.

[2] Quart. Jour. Med., 1930–31, xxiv., 101.

CHOLESTEROL METABOLISM IN EPILEPSY

CHOLESTEROL, as Mr. J. A. Gardner, F.I.C., reminded the B.M.A. Section of Pathology (see report on p. 577), is an integral constituent of all animal cells and body fluids. Its chemical relationships have been intensively studied, but hitherto its variations in health and disease have perplexed rather than enlightened the pathologist. A difficulty in investigating its metabolism lies in the fact that when released by the breaking down of the cells which contain it cholesterol is not excreted but is used in the formation of new cells. Our knowledge of its relation to arterio-sclerosis is now becoming more precise and, although no allusion to it was made at this discussion, the study of blood cholesterol in epileptic subjects is giving interesting results, impetus to the study having been given by the observation that a very high fat diet may control fits. Working at the State Hospital at Dixon, Illinois, Gray and McGee,[1] found the mean cholesterol content of the blood taken four hours after food in 29 observations on normal people to be 194 mg. per cent., in 312 observations on epileptics it was 163, and in 108 on feeble-minded it was 154. A total of 623 observations on epileptics, including blood taken at all periods after food, gave a mean result of 165. Their estimations were made, for the most part, on whole blood. A rise of cholesterol occurred frequently but not uniformly within the first hour or two after meals, and they conclude that a variation up to 30 or even 40 mg. per 100 c.cm. must be regarded as within the normal range for any individual. When however, averages of a large number of individuals are compared a difference of 10 mg. or even less may become of significance. With regard to fits, Gray and McGee find there is a definite low point (162 mg.) an hour after fits, the cholesterol gradually rising thereafter to a maximum of 172 when there has been freedom from fits for a month, though this figure, be it noted, is still considerably below that for the normal controls. All this tends to confirm the observations of Robinson, Brain, and Kay,[2] and of Gosden, Fox, and Brain,[3] and establishes the fact that blood cholesterol tends to be low in epilepsy, particularly just after seizures. No mention is made of the more vital and interesting problem of the pre-fit blood cholesterol. It might well be supposed that such a phenomenon as an epileptic fit would have complex metabolic results of an order that could be estimated. The important question is whether there are changes in the blood or cerebro-spinal fluid which precede the seizure and take a share in its determination. This point can only be cleared up by series of observations made at short intervals on the same patient for some hours before a fit occurs, or, not quite so satisfactorily, by a very large collection of observations made on a number of patients at varying intervals before fits have occurred. This principle applies to all metabolic investigations in connexion with epilepsy, but unfortunately as fits cannot be predicted with any certainty, serial pre-fit estimations can only be obtained occasionally after an immense amount of labour. Gray and McGee report some serial post-fit figures for cholesterol, which bear out the general results referred to above. A few serial pre-fit estimations were reported in the two papers published in our own columns, and these tended to show that the fit occurred near the bottom of a rather rapid fall in cholesterol content. The still lower level of blood cholesterol found in feeble-minded persons by Gray and McGee is striking. They make no comment upon it beyond suggesting that high fat diets might be desirable in institutions for these patients. The epileptic patients upon whom their observations were made were all hospital inmates. Their mental status is not specified, and the lowered cholesterol in their case possibly had relation with some condition other than the epilepsy. Further investigation might show a relationship between blood cholesterol and mental ratio.

DURABLE PEDIGREE SCHEDULES

FOR the study of morbid inheritance in man trustworthy records are essential. A schedule[1] already noticed in these columns has provided a uniform and adequate guide for this purpose. But it is not only morbid inheritance that needs to be recorded; normal and positive qualities, personality, attainments, intelligence, habits, and other such data are of relevance to the student of human genetics. In order that family pedigrees may be kept which will embody such information, the Eugenics Society has produced a larger schedule[2] which is designed to be filled in by intelligent persons desirous of transmitting to their descendants as full an account as possible of the members of the family in each generation. Such a record will be of the greatest value to any doctor called on in the future to give a genetic prognosis. The demand for a medical opinion on these points is steadily growing, but no system of recording pedigrees hitherto has provided the necessary data. The schedule is strongly made, with a buckram cover, and the paper is guaranteed to last for at least 100 years. All the parts are detachable, and specimen leaves and a reinforced vellum chart are provided, as well as full explanatory notes. Additional case-sheets, beyond the 30 included with the schedule, can be obtained as required. In making available so convenient and durable a pedigree schedule the Eugenics Society has rendered a service not only to genetics but also to preventive medicine.

STREPTOCOCCI

IT was in 1906 that Andrewes and Horder published their classical paper on the classification of the streptococci and gave a great impetus to the study of what have come to be the most important group of human pathogenic bacteria. Hygiene and serology have brought many microbes under at least partial control, but the streptococci have largely defeated the efforts of those who have sought to make out their modes of attack on the body or to treat established infections along specific bacteriological lines. Such studies must necessarily be based on the identification of the various kinds of streptococci which undoubtedly exist. Biochemical methods

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[1] Gray, H., and McGee, L. C.: Cholesterol Content of Blood in Epilepsy and in Feeble-mindedness, Arch. Neur. Psych., August, 1932, p. 357.

[2] THE LANCET, 1927, ii., 325.

[3] Ibid., 1929, ii., 12.

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[1] How to Prepare a Family Pedigree. Eugenics Society, Grosvenor-gardens, London, S.W. 6*d.*

[2] Pedigree Schedule. The Preparation of Family Records. Same publishers. 10*s.*

ave proved inadequate, and various workers have ttempted to supplement them with serological tests with partial but quite unsatisfying success. It seems lear that the hæmolytic organism generally known s *Streptococcus pyogenes* and responsible for the bulk of serious human infections is a "good species" n the natural history sense. But it is equally plain hat the different strains of this species are no more dentical than the diseases which they produce, and t has been the concern of many bacteriologists to eparate and characterise them. It is on this quest hat the late Sir Frederick Andrewes spent the last even years of his working life, in coöperation with Miss Lettice Digby and with, later, Mrs. E. M. Christie; he died on Feb. 24th, 1932, leaving a characteristic account of his work almost complete, and this has now been finished by Mrs. Christie and his son, and published by the Medical Research Council.[1] It contains a wealth of technical detail about the methods and results of agglutination tests which will be of value to those working along similar lines. The main conclusions are, however, disappointing in that they lead to no clear-cut and definite criteria whereby the identity or diversity of different hæmolytic streptococci may be certified. Possibly agglutination is a method which is inapplicable in this particular group, and certainly both in their capacity to stimulate the production of agglutinating sera and in their reactions to the same the organisms seem to be perverse and froward to an inexplicable degree. It seems more likely, however, that the microbes are to an exceptional degree variable and adaptable, and that they are in a continual state of flux which may account for their varied capacities of invasion and pathogenic action. It may well be that as in some cœlenterates the different species and subspecies run into one another in a confusing way. Studied in the laboratory they certainly give this impression, and it is compatible with much of the epidemiological evidence, as Prof. C. C. Okell pointed out in his third Milroy lecture this year.[2] A solution will no doubt be reached some day, but for the present the relation of the gram-positive cocci to the body remains one of the most urgent and baffling problems of bacteriology.

CHOLECYSTOGRAPHY

ON another page the uses and limitations of cholecystography in the diagnosis of gall-bladder disease are clearly defined by Dr. James F. Brailsford. His article is founded on a large number of carefully studied cases, and his conclusions will be accepted by most workers in this field. His plea for careful attention to technique and detail should not be ignored, for many errors in interpretation creep in from a neglect of minutiæ. This is particularly true among ambulatory cases, for the patient is not under direct control for a varying period between the administration of the dye and the radiological examination; unauthorised food, to specify but one pitfall, may readily upset the result of the oral test. Dr. Brailsford's statement that the demonstration of a gall-stone in a radiogram does not of necessity mean the discovery of the cause of the pain, and that complete gall-bladder radiology gives the best indication of the condition of the gall-bladder requires a little amplification. Cholecystography must take its place with other methods of investigation; it has not rendered obsolete other aids to diagnosis. The clinical examination and, above all, the history extracted from the patient (the word "extracted" is used advisedly) must not be lightly disregarded in favour of a so-called positive radiological finding. It must be remembered that a normal gall-bladder may give no shadow and that one containing stones can fill and empty normally. A short course of rest combined with digitalis may make all the difference between the filling and not filling of a normal gall-bladder in a patient with a congested liver. The best method of administration is still in dispute. Intravenous injection of the contrast medium is, on theoretical grounds, the most reliable method of administration, since, by this route, the amount of dye which reaches the circulation is under complete control. Most observers therefore regard it as giving the most accurate results. In practice, however, more and more radiologists are adopting the oral route as the usual method of administration; it does not necessitate a night in hospital, there is less chance of severe reaction, and it is easier to carry out. Hitzrot and Pendergrass have shown recently[3] that in selected cases the intravenous route can be used safely in an out-patient department, the patient being sent home for the night. They add, however, that intravenous injection of the dye must not be used in a casual or haphazard manner, a conclusion we strongly endorse. Efforts are being made by variations in the technique of oral administration to obtain a greater concentration of dye in the circulation while maintaining the reduced liability to reaction. P. B. Davidson and his co-workers[4] give an intravenous dose of dye "sufficient to visualise the gall-bladder" but small enough to eliminate reactions, and follow this two hours later with a half dose by the mouth "for fortification of the shadow." They report good results from this method, and say that it can be used with safety in ambulatory cases. Sandström[5] aims at a cumulative effect by the oral route, for he gives the dye on two successive nights before making his radiological examination. Anderson and Marxer[6] have reported eleven cases investigated in this way, giving the full oral dose the first night and, if the shadow is absent or faint, a three-quarter dose the following night. Their series is too small to be conclusive, but it is interesting to note that of the eleven cases that gave no shadow after the first dose nine showed a normal gall-bladder after the second. If no shadow is obtained a repeated test is always a wise precaution, unless there is strong supporting evidence, for many observers have reported what may be called a temporary failure to get a shadow from a normal gall-bladder, whichever method of administration is used. In every cholecystography the rate and mode of emptying of the gall-bladder should be observed. Valuable information is often obtained this way, particularly in connexion with the influence of food. The value of cholecystography being now definitely established, a more settled terminology is overdue. The process is called variously cholecystography, the Graham test, the Graham-Cole test, the Cole-Graham test, and the dye test. Even the terms positive and negative are used in different senses by different radiologists; here a real danger lies, for "positive" may mean that the examination gave a pathological result or that a normal shadow was present. Similarly, "negative" is used to indicate either that nothing abnormal was noticed or, on the contrary, that no shadow was seen. "Filled and emptied normally" and "did not fill" are not much longer to write, and admit of no possibility of mistake.

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[1] The Hæmolytic Streptococci: their grouping by agglutination. By F. W. Andrewes and E. M. Christie. Special Report Series No. 169. H.M. Stationery Office. 1932. 1s. 3d.

[2] THE LANCET, 1932, i., 867.

[3] Hitzrot, Lewis H., and Pendergrass, Eugene P.: Amer. Jour. Med. Sci., May, 1932, p. 593.

[4] Davidson, Percy B., Biguria, F., and Rosenthal, J.: Amer. Jour. Surg., 1932, xv., 525.

[5] Sandström, Carl: Acta Radiologica, 1931, xii., 8.

[6] Anderson, John H., and Marxer, O. A.: Brit. Med. Jour., 1932, ii., 401.

BLOOD GROUPS: THE BURDEN OF PROOF

In the discussion on blood groups in our last issue (p. 528) it was pointed out that there is a difficulty in compelling a defendant to submit to the test. Evidence of blood groups would be chiefly valuable in bastardy proceedings which, though taking place before magistrates, are not of a criminal nature. Where actual crime is charged, the English law is remarkably tender towards the accused. There is an old maxim that no one is obliged *prodere se ipsum*, to give himself away. Thus any statement made by the accused before trial must be safeguarded by an elaborate caution so as to ensure that the statement is entirely voluntary. At the trial itself the accused can go into the witness-box, give evidence, and be cross-examined. If he does not do so, the judge may, but the prosecuting counsel may not, comment upon the omission. As regards evidence of what the accused has said before trial, the Court of Criminal Appeal has held that his silence is not to be relied upon as corroboration of an uncorroborated story. In another recent case that court gave an equally important ruling. The accused had received the formal statutory caution when before the examining magistrates. He had been told that he need not say anything if he did not desire to do so, but that whatever he did say would be taken down and might be given in evidence upon his trial. He then replied, "I don't want to say anything except that I am innocent of the charge." When his case came on for trial, the presiding judge's summing-up contained some adverse comments on this refusal to speak. An innocent man, he suggested, would have said frankly where he was and what he was doing when the offence was committed; if, he added, an accused man hangs back and postpones what he has to say till the eleventh hour, it is often because he wants to deny the police the chance of investigating his story and proving it false. The Court of Criminal Appeal said the summing-up was unsatisfactory; it was wrong to suggest that an accused person (who by a statutory formula is warned that he need say nothing) stands silent at his peril. The conviction and sentence of six months' imprisonment were quashed. So tender is the criminal law towards the accused. It follows that, if in a criminal case there were any question of an accused man's blood being tested, the law would be slow to exercise any compulsion. Nor would prosecuting counsel be encouraged—nor indeed would the judge himself probably see fit—to comment on the refusal to submit to a test.

ANÆMIA AND HOOKWORMS

At this year's annual meeting of the American Society for Clinical Investigation, C. P. Rhoads and W. B. Castle reported that a study of over 150 cases of hypochromic anæmia, associated with hookworm infection, in Porto Rico showed that intramuscular injection of red blood corpuscles caused increased blood formation, and concluded that it was logical to assume that the blood loss caused by the worms was significant as constituting a loss of potential hæmopoietic factors, and so producing defective blood formation. Neither elimination of the worms nor enrichment of the diet by meat and milk reduced the anæmia within the short examination period of two or three weeks, but the daily administration of 6 g. of citrate of iron and ammonia was nearly always followed by reticulocytosis, rapid increase in hæmoglobin and red corpuscles, and clinical improvement, and that despite the persistence of heavy hookworm infection and of a deficient diet. Liver was less effective than iron. Since in these cases of hookworm anæmia deficient diets were the rule and gastric anacidity frequent, it is suggested, in spite of failure of enriched diet to cause improvement, that dietary deficiency and gastro-intestinal changes are of major ætiological significance. It is of interest then to recall the massive clinical experiment made by Bailey K. Ashford and his colleagues in the same island, after the devastating hurricane of 1899 had left thousands homeless and starving. He reported[1] how, when he attempted to feed up on nutritious army rations those whom he thought to be suffering from the anæmia of malnutrition, they went down with diarrhœa; when fed plentifully on their own bulky diet their anæmia was unimproved; but when, after he had made his historic discovery that they harboured hookworms, he treated them with thymol, the result was very different. "As soon," he wrote of the campaign which followed, "as some notorious old anæmic, who had spent his last cent to buy iron pills, would return to his bario cured, the whole bario would swarm about our ears." Nothing could be more definite in this massive experiment than the failure of diet and iron and the success of disinfestation by thymol in curing the anæmia. A like experiment is taking place in Syria at the present time, for H. A. Yenikomshian and D. A. Berberian[2] have reported striking betterment after removal of hookworms when egg counts and worm recoveries had shown that few hookworms were present, in one case eight only. Here the species was identified as *Ancylostoma duodenale*. That the hæmopoietic structures can be stimulated to raise the quality of blood while the cause of its poverty remains is unquestionable; that it is in the interest of a patient to throw on these structures this extra strain instead of removing the cause itself, few medical men are likely to admit.

Mr. James Rögnvald Learmonth, surgeon to the Mayo Clinic, Rochester, Minnesota, associate professor of neurologic surgery in the University of Minnesota, has been appointed regius professor of surgery in the University of Aberdeen, in succession to Prof. Sir John Marnoch.

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[1] Uncinariasis (hookworm disease) in Porto Rico. Washington, 1911.

[2] Trans. Roy. Soc. Trop. Med. Hyg., 1932, xxv., 399.

Central London Throat, Nose, and Ear Hospital.—The annual address will be given by Mr. Herbert Tilley on Friday, Oct. 7th, at 4 P.M., on the Nasal Accessory Sinuses. Lectures will be held at 4 P.M., on Fridays, every week during the winter session, beginning on Sept. 9th, when Mr. M. Asherson will lecture on indications for operations on the mastoid. Subsequent lectures will be noted in our Medical Diary.

British Hospitals Contributory Schemes Association.—The annual conference will be held at Torquay from Sept. 22nd to 25th. It will be attended by Dr. René Sand, of Paris, president of the International Hospitals Association, who will discuss the methods by which hospitals are maintained in various parts of the world. Delegates will attend to represent contributory schemes from all parts of the country.

SPECIAL ARTICLES

THE PATHOGENESIS OF MENTAL DEFICIENCY

By A. G. Morison, M.D., D.P.H.
DEPUTY MEDICAL OFFICER OF HEALTH, BRISTOL

The following observations are made after a study of 84 consecutive and personally investigated cases of mentally defective children. In every case inquiry was made in regard to insanity, attendance at special schools, nervous disorders, epilepsy, illegitimacy, and alcoholism in the families of both parents, and in the brothers and sisters of the children. The health of the mothers during the pregnancies and any accidents or upsets to their peace of mind were considered, as well as the full life-histories of the children themselves.

ENVIRONMENT AND HEREDITY

The children came from homes which were classified thus: (1) easy and comfortable, with good intelligence of the parents, in which the children had been well cared for since birth; (2) casual, the parents being of poorer intelligence, but not neglectful of the children; (3) more casual and thriftless homes, with parents of poor intelligence and evidently neglectful of their children.

TABLE I.—*Environment and Defect*

Group.	Comfortable.	Casual.	Neglectful.
Idiots	2	—	—
Imbeciles ..	19	2	—
Feeble-minded ..	23	31	7

Table I. shows that the lowest grades of all had had better surroundings from birth than the others. In 62 per cent. of the feeble-minded, the home surroundings were casual or neglectful, the corresponding figure for the imbeciles and idiots being only 8·7 per cent.

In the lower-grade group (notifiable to the local mental deficiency authority) the family histories were completely healthy in exactly 50 per cent. of the cases. Mental defectiveness appeared in nine cases, in five cases one of the parents being feeble-minded. In the 34 families of this group there were 113 living children, 37 (that is 32·7 per cent.) of whom were defective, and in 3 cases only did the children have a defective brother or sister.

In the higher-grade group (not so notifiable) the family histories were healthy in only 36 per cent. of the cases. Feeble-mindedness itself was present in 25 of the family histories, for both parents were feeble-minded in 2 cases and one parent in 13 cases, and mental defect was otherwise present in the family histories of 10 other children. These 50 children belonged to 49 mothers who had in all 188 living children, 63 (that is 33·5 per cent.) of whom were defective, and in 14 cases the children had defective brothers or sisters.

Regarding a family history of mental defectiveness, then, these points emerge: (*a*) in the lower grade 26 per cent., and in the higher grade 50 per cent., had such a heredity; (*b*) there were 8·9 per cent. siblings in the lower grade, but 28·6 per cent. in the higher grade.

FORM OF BIRTH

In the case of 75 children the birth was natural, instrumental aid being applied in 9 cases. Six low-grade children call for further comment. For, in every one the family history was untainted, the mother was of high intelligence, the pregnancy throughout was uneventful, but in 4 cases severe fits commenced within a few hours of birth, in the fifth case the head of the child "was out of shape for three weeks," and the sixth case was one of placenta prævia, terminated by instruments without anæsthetic because of the mother's excessive hæmorrhage. All the children were males; one was a cerebral diplegic, one a spastic paraplegic, one had a monoplegia (left arm), and four of these six children continued to have fits.

POSTNATAL ILLNESS

Of the lower-grade children three had had encephalitis, two suffered from fits (both commencing at about eight months of age), one had had cœliac disease, and one had had whooping-cough when three months old. (One night he coughed until blood ran from his ears, nose, and mouth.) He was a deaf mute. Five higher-grade children seemed to have had their development arrested in the following ways, three by fits (one so afflicted at six weeks, one till two years old, and one between two and three years), one was a case of dyspituitarism, and perhaps a fall out of his perambulator at the age of seven months had seriously affected another.

SOME OBSERVATIONS ON THE CHILDREN

The male sex predominated, more especially in the higher-grade cases (Table II.).

TABLE II.—*Sex-incidence*

Sex.	Lower-grade cases.	Higher-grade cases.	Total.
Male ..	20 (58·8 %)	32 (64 %)	52 (61·9 %)
Female	14 (41·2 %)	18 (36 %)	32 (38·1 %)

The children commenced to walk at times shown in Table III. As well as never reaching to normality, the defective seems generally to develop more slowly than the normal, such retardation being still more marked and of a greater significance, however, in the development of speech.[1]

TABLE III.—*Time of First Walking*

—	Under 18 months.	18 mths.–2 yrs.	2–3	3–4	4–5	Over 5	Still cannot walk.*	Age unascertainable.
Lower grade	12, or 35 %		3	10	2	3	4	—
Higher grade	21	10	12	1	—	—	—	6
	31, or 62 %							

*All aged over 7.

CRANIAL CIRCUMFERENCE

Tredgold[2] gives a table of the normal cranial circumference for age and sex. 79·4 per cent. of the low-grade cases had a cranial circumference appreciably less than this normal, and in 20·6 per cent. this normal was exceeded; 64 per cent. of the higher-grade children failed to reach the average measurement, 22 per cent. were normal, and 14 per cent. exceeded normality.

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[1] Morison, A. G.: The Lancet, 1932, i., 931.

[2] Tredgold, A. F.: Mental Deficiency, London, 1929.

These findings are in agreement with the general observation that in physique also the mentally defective is subnormal. He often looks, as he is indeed, younger than his years.

ORGANIC NERVOUS SYSTEM

The organic nervous system was normal in 56 per cent. of the lower-grade and in 88 per cent. of the higher-grade children. In the first group, three suffered from cerebral diplegia (one with athetosis), three others from spastic paraplegia, two from hemiplegia, one from monoplegia (left arm), and there were two in whom the only abnormality elicited was a unilateral extensor plantar reflex. One case showed a mid-brain lesion, and another had ataxia of one arm. One girl showed a general amyotonia which was evidently improving (she was then aged 7 years, it may have been amyotonia congenita), and in another child there was only a poor balance generally. In the second group, one child showed ataxia of the right arm, one had not then (aged 5 years) gained full coördination of the muscles of the pharynx. In another, there was general muscular atonia, and in three others a poor balance.

Sixteen, or 47 per cent., of the first group showed strabismus; 11, or 22 per cent., of the second group were similarly affected. Amongst 7222 children examined in the ordinary schools, 1·39 per cent. showed strabismus.

OCCURRENCE OF FITS

Amongst the low-grade children, 19, or 55·9 per cent., had never had a fit, 12 remained subject to fits, the 3 others each having had one isolated fit. Amongst the higher-grade children, 84 per cent. of the group had never had a fit, and only one of the group remained subject to fits. Amongst 7222 children attending ordinary elementary schools, a history of fits was elicited in 0·16 per cent.

CONCLUSIONS

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These findings are in agreement with the general observation that in physique also the mentally defective is subnormal. He often looks, as he is indeed, younger than his years.

ORGANIC NERVOUS SYSTEM

The organic nervous system was normal in 56 per cent. of the lower-grade and in 88 per cent. of the higher-grade children. In the first group, three suffered from cerebral diplegia (one with athetosis), three others from spastic paraplegia, two from hemiplegia, one from monoplegia (left arm), and there were two in whom the only abnormality elicited was a unilateral extensor plantar reflex. One case showed a mid-brain lesion, and another had ataxia of one arm. One girl showed a general amyotonia which was evidently improving (she was then aged 7 years, it may have been amyotonia congenita), and in another child there was only a poor balance generally. In the second group, one child showed ataxia of the right arm, one had not then (aged 5 years) gained full coördination of the muscles of the pharynx. In another, there was general muscular atonia, and in three others a poor balance.

Sixteen, or 47 per cent., of the first group showed strabismus; 11, or 22 per cent., of the second group were similarly affected. Amongst 7222 children examined in the ordinary schools, 1·39 per cent. showed strabismus.

OCCURRENCE OF FITS

Amongst the low-grade children, 19, or 55·9 per cent., had never had a fit, 12 remained subject to fits, the 3 others each having had one isolated fit. Amongst the higher-grade children, 84 per cent. of the group had never had a fit, and only one of the group remained subject to fits. Amongst 7222 children attending ordinary elementary schools, a history of fits was elicited in 0·16 per cent.

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Dáil. At a recent meeting of the County Meath Board of Health, the propriety of Dr. O'Higgins's political activities was questioned by the chairman of the Board and by some of the members. Dr. O'Higgins said that he was conscious of his responsibilities as a public officer, and that he fulfilled his duties as such. If it were proved that he were not carrying out his duties satisfactorily he would resign, but as long as he was carrying out his duties he would spend his spare time as he chose. In a letter to the press on the meaning of the term "whole-time medical officer," Dr. T. Hennessy, medical secretary of the Irish Medical Committee, states that "whole-time" meant simply that a county medical officer of health shall devote his professional services entirely to public health work, and not engage in private practice. Such a provision is intended to ensure the independence of the medical officer of health. "Before and after the working hours necessary to discharge their duties," Dr. Hennessy concludes, "county medical officers of health are free to take part in politics, farming, or even dog-racing if inclined that way."

IRISH MEDICAL MEN ON OLYMPIC COUNCIL

Among the members of the Irish Olympic team returning from the Olympic Games at Los Angeles, Dr. Patrick O'Callaghan, assistant medical officer at the Clonmel Mental Hospital, was welcomed at a public reception and dinner in Dublin on August 27th. He won the hammer event at the games, and was the only winner at Los Angeles who retained the championship won at the previous games at Amsterdam. His performance was some eight feet better than at Amsterdam.

Sir William Wheeler, who has been surgeon to Mercer's Hospital for 28 years, has left Dublin, and intends to practise in future in London. He has accepted appointment as one of the surgeons to the new Southend Hospital.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

CONTROL OF PELLAGRA

MANY in this country are still unwilling to regard pellagra simply as a deficiency disease, partly perhaps because the brilliant experimental work of Goldberger and his associates is so slow in bringing practical results. At a recent meeting of the American Medical Association in New Orleans, two surgeons of the U.S. Public Health Service pointed out[1] that of the 7146 deaths due to pellagra in 1930, 7000, or 97·9 per cent., occurred in those States which lie wholly or partially within the cotton belt, and most of the cases were found in that portion of the cotton belt actually engaged in the production of cotton. Whilst this very high mortality persists, and the morbidity is said to be actually increasing, the disease has already come under control in institutional life. The largest insane asylum in the south has reduced its pellagra mortality from 6·2 per cent. of all inmates to less than 0·1 per cent. Up to the present 35 foodstuffs have been tested by the public health service to determine their value as preventives of pellagra. Of these, milk, fresh beef, canned corned beef, liver, canned salmon, canned haddock, tomatoes, turnip greens, and canned English peas have each been found to prevent pellagra when added in sufficient quantity to an otherwise pellagra-producing diet. Dried yeast and commerical wheat germ are good sources of the P.-P. vitamin and are recommended for use in emergency. It is in late winter and early spring that the people in the cotton belt need supplementary foods. The Department of Agriculture backed by the agricultural colleges with their extension services, and generously aided by the newspapers, has long supported a programme of diversified farming. Progress has been very slow, and many believe the only hope of controlling this preventable disease to be in controlling the price of cotton.

CONSUMPTION CURE FOUND FRAUDULENT

When the United States supreme court decided some years ago, in a divided opinion, that the words "false or misleading in any particular" in the Food and Drug Act referred only to the composition of the drug and not to therapeutic claims made therefor, a serious blow was struck at the efficacy of the Act in controlling the sale of secret remedies. To repair the damage wrought by this decision, Congress passed the Sherley amendment in its original form; this amendment declared a medicine misbranded when "false or misleading" claims were made. But the enemies of public safety were successful in getting this phrase changed to "false and fraudulent." It is now necessary, therefore, to prove to the jury not only that the claims made by the manufacturer are misleading to the public but that they were intended by him to mislead the public.

A remedy for consumption, rheumatism, lumbago, croup, and other diseases was originated by one W. P. McClellan, who owned a livery stable and used the remedy on his horses. This remedy, known as B. and M., is a simple liniment of, essentially, turpentine, ammonia, and egg. The federal government brought a case against B. and M. in 1922 and lost it. After 10 years, on July 19th, 1932, again at the instance of the federal government, this nostrum has been declared misbranded in the federal district court at Baltimore. During the trial the B. and M. concern called a number of witnesses who alleged that they had been benefited or cured by the use of the liniment. The government was able to prove, however, that those who had had active tuberculosis still had active tuberculosis. A testimonial widely used by the B. and M. concern had been written by a consumptive who at definite intervals received cheques from the concern, and who eventually had died of his disease.

The judge in his instructions to the jury expressed two opinions of considerable importance. The first, supported by a quotation from a supreme court pronouncement, is that persons who make or deal in products alleged to have curative powers are in a position to have, and are expected to have, superior knowledge of the preparation and marketing of such articles. The second is that the simple assertion by a manufacturer of his faith in the virtues of his product is not to be construed as proof of good faith when the manufacturer's opinion is contrary to an overwhelming mass of expert testimony.

POST-VACCINAL ENCEPHALITIS

Of the 700 cases of this disease on record, 71 have been recorded in the United States during the last years. It has not been found possible to incrim- ate any particular method of vaccination or any rticular batch or strain of vaccine virus ; cases have llowed the employment of calf virus from 10 out of total of 18 vaccine establishments. Two out of e 71 cases are reported to have followed a second accination. All cases, except one, followed single sertion vaccinations, this being the technique mmonly employed in this country. Dr. Charles rmstrong, of the U.S. Public Health Service, has rought forward a theory, based partly on previous oservations and partly on his own experimental ork, that a previous "non-specific" stimulation of the body's defence mechanism may tend to prevent post-vaccinal nervous complications. He has shown that if a preliminary injection of toxoid is given to white mice, who are subsequently given an intracerebral injection of vaccine virus, there are more survivals in the toxoid immunised groups, and also the toxoid treated mice tend to die later than the controls. It is suggested that a similar protection may be conferred in man by the following technique : the first dose of toxoid is given at six months of age and the second dose one month later. Vaccination against small-pox is given three to four weeks after the second inoculation with toxoid.

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[1] Wheeler, G. A., and Sebrell, W. H.: The Control of Pellagra, Jour. Amer. Med. Assoc., 1932, xcix., 95.

PANEL AND CONTRACT PRACTICE

Usual Occupation

"A man must be capable of doing his own work or lse he was not capable of work." This statement, ttributed by the *National Assurance Gazette* to)r. H. G. Dain, chairman of the Insurance Acts Committee, is of course perfectly correct in assessing *n the first instance* any insured person's capacity or ncapacity for work. This principle was recognised n Memo. 307/IC issued by the Ministry of Health, where it is stated that an insured person might be egarded as incapable of work by reason of specific lisease or bodily or mental disablement when he is in uch a condition that an attempt to work would be eriously prejudicial to his health; and *secondly*, hat he should be regarded as totally unfit if, as will ordinarily be the case, it appears probable that he will soon be able to resume his former work, and that t would therefore be unreasonable to expect him to take any other form of work in the meantime. The last part of this clause, however, indicates that Dr. Dain's words were not intended to be a complete statement of the position. It has never been contended that because (say) a 'bus-driver loses a limb as a result of accident, and thereby becomes for ever incapable of driving a motor-bus, he should be written off as permanently incapable of work, and approved societies are frequently referring cases to regional medical officers for an opinion whether the insured person could not now be considered fit for some other gainful occupation. This opinion may be easy to give or it may be beset with difficulties. For instance, a farm labourer living in a small village contracts Bright's disease with some secondary bronchitis. The examining officer might easily come to the opinion that he was capable of doing something, such as clerical work, not involving exposure to cold or damp ; but what chance would there be of this man being able to find this work in a small village, or that he would be mentally able to do it. Other cases which are always giving trouble about incapacity are epileptics and asthmatics ; both are quite incapable of work during periods of attack, and in the great majority of cases both are fit to work within a relatively short time after the attack is over. Epileptics are only capable of work "not involving danger to themselves or others," and in both types the frequency of attacks is the crucial factor in deciding whether they are fit to work at all. In such cases it becomes simply a matter of who is to pay for their maintenance. If, as the *Gazette* says, the doctor certifies them incapable then the N.H.I. funds pay; if they are marked not incapable, being fit for something which has a restricting clause added "not involving so and so," they become chargeable to unemployment funds, if they are in an insurable occupation ; and if not, being unable to obtain work, they eventually come under the care of the public assistance committee.

NOT UNFIT FOR HOME WORK

The difficulty of married women's incapacity, which was so prominently brought to the notice of the profession recently, has resulted in a departure from the usual form of certificate issued by the regional medical staff to doctors and to societies. It will be remembered that the claims of married women for sickness benefit had more than doubled, and societies were put to it to do something to cut down these excessive claims. Many married women were coming under the Act as a result of one or two days' occupation per week, only to be certified as incapable of charing, or some quasi part-time post, owing to some incapacity, either temporary like pregnancy, or possibly permanent like rheumatoid arthritis ; frequently these people were thought by sick visitors to be quite capable of doing unaided the ordinary household work at home. Societies have now come to an understanding with the Ministry, under which they can obtain the opinion of its regional medical staff as to whether an insured person is capable of doing unaided her ordinary household duties. The form of words used in the reports, both to societies and doctors runs : ". . . is unfit at present to resume her former occupation but is not unfit for the ordinary daily work of her home," the words "incapable of work" on the usual form of report being erased. There has been no communication from the Ministry of Health to the profession generally, nor to panel committees, authorising insurance practitioners to alter Form Med. 40 (the ordinary certification form) in any way. On that form the doctor has to certify either incapacity or fitness to resume, and it is held to be a breach of the terms of service to alter it. The position appears to be that the regional medical staff may give opinions to approved societies on these cases whilst the practitioner in attendance is not permitted by law to do so.

A CITY DISPENSARY.—Under a scheme which has been sanctioned by the Charity Commissioners the Royal General Dispensary in Bartholomew-close, London, founded in 1770 by John Lettsom, is to be merged into St. Bartholomew's Hospital. The transferred property consists of the freeholds of 24, 25, and 26, Bartholomew-close, which is occupied partly by the charity and partly by a tenant who pays a rent of £450. The dispensary is to occupy part of the hospital building at a rent fixed by a valuer, and the medical and secretarial work will be done by the hospital in return for an annual payment. Should it no longer be possible usefully to carry on the dispensary section of the charity, its clear yearly income will be transferred to the hospital so long as the work of visiting out-patients at their homes is continued within the dispensary's area.

CORRESPONDENCE

CARBOHYDRATE CONTENT OF FOODS

To the Editor of THE LANCET

SIR,—Since our return from holiday we have been interested to notice the correspondence in your columns (pp. 372 and 420) about the carbohydrate food values published by us in 1929. We are glad to see that the analytical accuracy has not been challenged. We admitted frankly at the time of publication that our figures were far from perfect, but that we believed they represented the best approximations to the truth so far obtained, and this statement has remained uncontradicted for three or more years. Previous food tables were very largely based on the American analyses of 1899 in which the carbohydrate was determined "by difference." Our figures which tried to differentiate available from unavailable carbohydrate differed enough from the older ones to affect diabetic therapy, since the older figures for carbohydrate included in many instances large amounts of carbohydrate material which was not absorbed and metabolised as carbohydrate. Most American authors have completely ignored the newer figures and have continued to use the older ones, whereas the German, Scandanavian, and some British authors have advanced to the 1929 tables as indeed, we believe, ought generally to be done until we, in our turn, are shown to be wrong and our work out-worn.

We are, Sir, yours faithfully,

R. D. LAWRENCE,
R. A. MCCANCE.

The Diabetic Clinic, King's College Hospital, Sept. 3rd, 1932.

SPLENECTOMY FOR SPLENO-MEDULLARY LEUKÆMIA

To the Editor of THE LANCET

SIR,—In your issue of Sept. 3rd (p. 516) you report that Lord Dawson stated, at a recent discussion on the indications for removal of the spleen, that apart from trauma and rare tumours there are three diseases only in which splenectomy is justified—acholuric jaundice, purpura hæmorrhagica, and splenic anæmia. With the exception of McNee's statement, later in the discussion, that he includes the majority of leukæmias in his list of conditions in which splenectomy is contra-indicated, I find no reference to leukæmia. Lord Dawson's statement prompts me to send you a preliminary note of a married woman, aged 36, in whom splenectomy was this year deliberately performed for the relief of myeloid leukæmia. I understand that it is the first case of the kind in Westminster Hospital. The immediate result has been dramatically successful, but I propose to wait for a year before submitting a full account for publication.

The patient, who had been ill for a year, was admitted on May 10th. The spleen was enormous, the liver a little enlarged; but apart from the state of the blood she showed no evidence of disease. She was weak and breathless, due as much to the splenic bulk as to a moderate anæmia. The myelocytes were 76 per cent. of 150,000 white cells per c.mm. Between May 10th and 23rd, during which period she was confined to bed and given iron and arsenic by mouth, the white cells increased to 195,000; the myelocytes decreased however to 27 per cent. The spleen was then treated with radium, and liveroid was substituted for the iron and arsenic. On May 30th, after four applications of radium, the curve of the leucocyte count had fallen sharply. She had 46 per cent. myelocytes of 54,000 white cells. On June 18th, after a total of 11 applications of radium, and liveroid, the myelocytes were 16 per cent. of 60,000 white cells. This count was made immediately before operation. She felt neither better nor worse, and the spleen, although considerably reduced in size, was very large. Although the number of myelocytes had steadily decreased, the total number of leucocytes which had fallen so dramatically in conjunction with the first few applications of radium showed no further tendency to fall and remained about 60,000. It seemed that radium had done all it could for the time being. As I was unable to convince myself that splenectomy, certainly at this stage, had any claim to be harmful I accepted the alternative—namely, that it should be beneficial, although this view seemed opposed to general teaching. Accordingly, I asked Mr. Rock Carling to operate, and he did so on June 18th. Hæmorrhage was trivial and adhesions few. The spleen weighed 3½ lb. and showed a single yellow infarct, but not at the site of the adhesions. There was a sharp post-operative rise in the leucocyte curve to 75,000 (myelocytes 21 per cent.) within two minutes of ligaturing the pedicle and removing the spleen. After this rise the curve fell equally sharply, and on July 1st, two weeks later, the myelocytes were 8 per cent. of merely 8500 white cells. Further treatment specific to the disease is contemplated, but none of any kind has been given since the operation. On July 20th, the day of her discharge, the myelocytes were 4 per cent. of 8100 white cells, and on August 9th, on her return from convalescence, they were 2 per cent. of 7500 white cells. She said that she felt very well.

Osler (1910) wrote that splenectomy of the leukæmic spleen had been performed 43 times with 5 recoveries, but he did not state the type of leukæmia. In spite of this I have been brought up to accept the teaching that splenectomy in myeloid leukæmia is uniformly fatal from collapse or hæmorrhage. I quote this statement from Taylor's "Practice of Medicine" (1925). Surgery seems to be contra-indicated, not because of its failure to prevent relapse and ultimate death, and not because of the futility of treating a part only of the tissue which is diseased, but because operation is directly fatal. But from my experience of splenectomy in other conditions in which the spleen is diseased and enlarged, I have not understood the reason for supposing that collapse or hæmorrhage will occur specially in the surgery of myeloid leukæmia, and with such particular fatality. The cause of collapse, apart from the duration of the operation in a sick patient, may be supposed to depend in part on the too rapid expansion of compressed abdominal vessels. Hæmorrhage, severe enough to kill, may by inference be anticipated chiefly from vessels within adhesions. But surgeons deal with these matters successfully when they remove other abdominal masses.

I am, Sir, yours faithfully,

HILDRED CARLILL, M.D. Camb.,
Physician to Westminster Hospital.

Harley-street, W., Sept. 3rd, 1932.

THE INCREASE IN ARSENIC-RESISTANT SYPHILIS

To the Editor of THE LANCET

SIR,—While agreeing with Dr. Burke's main contentions I must demur from attempts to find a formula, with mathematical exactitude, as to the quantity of treatment required to cure syphilis. I am certain Dr. Burke will agree with me that it is not syphilis but syphilitics we are to treat, and that no two cases are similar. Bearing this in mind I would ask Dr. Sequeira what "authority" would have the courage to state with exactitude what constitutes adequate treatment. I know of no disease where a therapeutist would state with accuracy the quantity of drug required to cure that disease, yet one attempts to do so in syphilis where the ravages are so protean. Can Dr. Burke tell your readers with certainty the life-history of the spirochæte; can he even tell at what stage of this life-cycle (if there is one) the primary sore develops; can he tell us whether all are infected with a similar strain or even how long the disease remains focal? This being so, is it not preferable to have a working basis of treatment, and to treat individuals as necessity demands?

I am, Sir, yours faithfully,

London, W., Sept. 5th, 1932. M. W. BROWDY.

"QUINSY-VOICE WITHOUT QUINSY"

To the Editor of THE LANCET

SIR,—In a letter published in THE LANCET July 16th (p. 158) Sir James Dundas-Grant asks if others have noticed the "quinsy-voice" in cases of œdema of the pharynx or larynx without quinsy. On two occasions recently I have examined patients with this symptom. Each time before inspecting the mouth I had remarked to my clerk that here is a case of quinsy and I was astonished to discover that in each case the view from the mouth was normal. On laryngoscopy, the first case showed œdema of the epiglottis, the second case swelling of the back of the tongue. Both recovered in a few days with inhalations, adrenaline injections, salicylates, and fomentations to the neck. I have never met the symptom before.

I am, Sir, yours faithfully,

A. BRAMWELL COOK, F.R.C.S. Edin., M.R.C.P. Lond.,

Medical Officer in Charge, Emery Hospital,
August 17th, 1932. Anand, India.

INTERMITTENT HEADACHE IN WOMEN

To the Editor of THE LANCET

SIR,—After reading Dr. A. P. Thomson's paper in your issue of July 30th I came to the conclusion that I had been entertaining angels unawares, in that a case in my care showed the syndrome described by Dr. Thomson.

The patient, an intellectual and critical woman of 33, first described her symptoms to me in June of this year, when I happened to see her during an attack. The headaches develop regularly on the day before her period, the periods being scanty but regular, with a 28-day cycle. On the day before the menstrual flow begins she wakes with the impression that her sight is obfuscated, and that acuteness of vision is reduced by about half; there are no fortification images. She creeps about until midday, by which time the headache is in full swing and she is obliged to retire to bed. Light becomes unbearable to her, and the pain is intense; at first diffuse, it later settles down in the region of the left temple, just above the zygoma. Nausea often accompanies the pain, but she never vomits during the attacks now, though previously she did so. She lies, she says, "dead still, waiting for the evening," her experience being that the pain goes with the daylight.

There is a perfectly definite moment at which the pain begins to abate, associated with what she describes as "a small physical movement inside the head." She tried to illustrate this sensation to me by holding two matchsticks vertically between finger and thumb, and clicking one past the other. From the instant at which she experiences this movement the pain begins to ebb, and by the end of two hours it has disappeared entirely. By this time it is usually 10 or 11 o'clock at night; she feels at once relieved, exhausted, and very hungry. During the attack she passes frequent formed motions and large quantities of pale urine.

She cannot recall having these headaches before the age of 18, though she remembers several outstanding attacks of the kind at or about that age. Since her marriage at the age of 24 the headaches have been more regular in their appearance, but she says that they only began to occur with "devastating regularity" after the birth of her first child in 1928. During her two pregnancies she had no headaches, was never sick, and felt extremely well.

She occasionally gets similar but less severe headaches during the intermenstrual period if subjected to undue strain and after travelling by train or boat, or in any vehicle with much vibration.

Up to the time when she first gave me this history she had tried the usual analgesics, such as aspirin and phenacetin, and had found that, though they might delay the onset of the headache, they never checked its course or prevented its development. Luminal was no more effective. She herself was convinced that the condition had its roots somewhere in the reproductive system, and was not to be approached by drugs acting on the central nervous system only. In 1928 she had her eyes examined by an ophthalmologist, who found in them nothing to account for the headaches. Her teeth and throat are in good condition, and her blood pressure 100/70.

Influenced by the fact that the headaches disappeared during pregnancy, I suggested that she might try taking extract of placenta by mouth, and ordered grs. 2 of Armour's dried preparation of placenta daily. She took the tablets in rather a desultory fashion for a few days before her July period. Neither of us, however, felt particularly confident that they would have any effect, and it cannot be said that the treatment received a thorough trial; at all events, the headache appeared promptly on the appointed day, and the patient refused to swallow any more placenta. The appearance of Dr. Thomson's article, however, and of the statement in your issue of August 20th that treatment of this condition with emmenin was being tried in Canada, gave me grounds for urging her to continue the treatment. Encouraged by the discovery that she had an authentic and recognised disease she embraced the remedy with fresh enthusiasm, and I took the opportunity to double the dose. The result, on the occasion of her August period, was remarkably successful; the onset of menstruation was delayed for a day or two, but the headache failed to develop, and she felt unusually well. How far a psychological basis explains this relief it is difficult to say, but further treatment along the same lines will doubtless determine. She is now prepared to take grs. 4 of the dried preparation daily throughout the intermenstrual period, and I should be glad to know whether there are any objections to this dosage.

In view of the X ray findings in 17 out of Dr. Thomson's 25 cases, a stereoscopic radiogram was taken of the region of the sella turcica, but no evidence was found of ossification of the interclinoid ligaments. It would be interesting to know, in terms of Dr. Thomson's theory of the cause of the pain, what is responsible for the sensation of movement inside the head felt by the patient just before the pain begins to abate. It scarcely seems possible that the pituitary, having remained for some time swollen and compressed against an abnormally complete dural roof to the sella turcica, begins to subside with such abruptness that the patient can distinguish the very moment at which, so to speak, the ebb sets in.—I am, Sir, yours faithfully,

MARGARET N. JACKSON.

Castelnau Gardens, S.W., Sept. 1st, 1932

"SAPRÆMIC" GLYCOSURIA

To the Editor of THE LANCET

SIR,—Temporary glycosuria is not uncommon; temporary hyperglycæmic glycosuria is much less common. One of the causes is a depression in the power of storing sugar due to an infection; this has been termed "sapræmic" glycosuria. A typical case is one in which the patient has multiple boils; sugar is found in the urine, but after the boils have healed the sugar disappears from the urine and the patient appears to possess the average capacity to utilise carbohydrate. I have had little opportunity of investigating such cases five or more years after the attack, but frequently patients who are suffering from diabetes mellitus tell me that they had "a touch of sugar some years ago." The object of this letter is twofold: to learn the result of investigation of these cases of temporary glycosuria, and also to ask practitioners who have happened to see these cases to send them to a hospital for the necessary investigation, and then to publish their cases to permit us to learn whether there is such a condition as "sapræmic" glycosuria, or whether it is not really a temporary exacerbation in early mild diabetes induced by the toxins of the infection.

I am, Sir, yours faithfully,

London, W., Sept. 3rd, 1932. O. LEYTON.

THE ÆTIOLOGY OF GOITRE

To the Editor of THE LANCET

SIR,—An annotation in your issue of August 20th (p. 408) gives me the opportunity for a few remarks on the goitre-producing qualities of the cabbage diet of the Carpathian highlanders in Ruthenia, a part of the Czechoslovak Republic, where on the basis of Colonel R. McCarrison's experiments I studied the occurrence of goitre. Goitre occurs endemically in parts of these highlands, in some of the bad centres there are cretins and cases of myxœdema; cretins were found not only amongst the Ruthenians but also amongst the Jews living in the same villages. The worst goitre centres are found in villages where during the colder months of the year more than two-thirds of the population live to a great extent on cabbage, with addition of potatoes, maize bread, and oats, and the villagers, apart from those engaged in lumber work, live an unhealthy life in dark unventilated huts. The quantities of cabbage consumed are not small, a family of five members consuming daily about 2½ kilos; the very poor families may have cabbage nearly daily—three to four times weekly is the rule. Cabbage is used as a store food, pickled for from two to three weeks. Generally the pickling begins about the middle of October, with some early cabbage at the end of September; a family of eight members may pickle about 500 kilos. This pickled cabbage, stored in barrels, is a very important part of the diet during the months October to December.

The ætiology of goitre is manifold, and we do not seek in the cabbage diet the one and only reason for goitre in the Ruthenian highlands, yet our observations, made quite independently of Colonel McCarrison, bear striking resemblance to his. The following Table gives a few figures:—

Occurrence of Goitre amongst Children of all Ages from 6 to 14 Years from all Villages

—	Cases	Without goitre and percentage.	Slight enlargement and percentage.	Medium enlargement and percentage.	Excessive enlargement and percentage.
Boys	*294*	*71 (24·1)*	*149 (50·7)*	*56 (19·0)*	*18 (6·2)*
Girls	245	65 (*26·5*)	113 (46·1)	44 (18·0)	23 (*9·4*)
Occurrence of Goitre amongst Children from Three Villages with Excessive Cabbage Diet					
Boys	161	16 (10·0)	87 (54·0)	44 (27·3)	14 (8·7)
Girls	114	9 (*7·9*)	64 (56·1)	23 (20·2)	18 (*15·8*)

The italicised figures show the marked differences.

In this table the well-known sex difference in the occurrence of goitre is distinctly marked; the percentage of cases without goitre out of the whole group of villages is much higher than the percentage from the three villages with excessive cabbage diet, while the percentage of cases with excessive goitre amongst the girls of the selected group is nearly twice as high as the percentage of the whole group. Following McCarrison, we put forward the view that the high incidence of goitre amongst the Carpathian highlanders is due to excessive cabbage diet during the winter months.

I am, Sir, yours faithfully,

Prof. V. SUK, M.D., Ph.D.

Brno, Masaryk University, Anthropological Institute, Czechoslovakia, August 27th, 1932.

THE SERVICES

Attendance on Officers' Families

COMPLAINT has recently been made that wives and families of military officers are left, by the new edition of the R.A.M.C. Regulations, just as they were before—only entitled to medical attendance by officers of that corps provided their lodgings are within a mile of the military hospital or the centre of the military station; and it has been proposed that the War Office should remove this limitation, as officers' families are now less able than formerly to pay the fees of practitioners in whose neighbourhood they may be settled. We were not told, of course, how many additional R.A.M.C. officers would then be required, nor how they are to be obtained, the strength of the corps being already 18 per cent. below establishment, for more medical officers would certainly be required, at least in the larger stations. The very considerable total of work done by the executive ranks of the corps is only made possible by collecting the patients for them in medical inspection rooms, so that time is not wasted in mere travelling, with clerks and orderlies to give help, and a hospital in the background to take charge of serious cases. The care of officers' families, in their widely scattered quarters, is a serious consideration to medical officers without the time-saving car that facilitates civil family practice.

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. W. H. A. Sinclair-Loutit is placed on the Retd. List.

Surg. Lt.-Comdr. P. J. A. (The) O'Rourke to *Harebell*.

Surg. Lts. E. R. P. Williams to Portland Hospital; F. W. Besley to *Dorsetshire*; W. D. M. Sim to *Courageous*; R. J. Corbett to *Tamar*, and for duties in dockyard; W. M. Greer transferred to permanent list; J. J. Cusack to *Vernon*; F. G. V. Scovell to *Royal Sovereign*; and L. G. Yendoll to *Victory*, and to *Hawkins* (on commng.).

ROYAL NAVAL VOLUNTEER RESERVE

Payr. Lt. C. G. Batty-Smith, M.A., M.R.C.S., transferred to Medical Branch as Surg. Lt.

Proby. Surg. Sub-Lt. G. F. Jones to *Victory*, for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. S. E. Lewis retires on retd. pay.

Maj. H. H. Blake to be Lt.-Col.

Maj. J. La F. Lauder, half-pay list, retires, receiving a gratuity.

Lt. (on prob.) R. V. Wright is secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931.

Lt. (on prob.) J. V. Quinn resigns his commn.

MILITIA

Maj. C. M. Page retires on attaining the age limit and is granted the rank of Lt.-Col.

TERRITORIAL ARMY

Lt.-Col. J. V. Bates to be Bt. Col.

RESERVE OF OFFICERS. REGIMENTAL LIST

Lt.-Col. and Bt. Col. J. V. Bates, from Active List, to be Lt.-Col. and Bt. Col.

ROYAL AIR FORCE

RESERVE OF AIR FORCE OFFICERS

G. Dunderdale is granted a commission in Class DD as a Flight Lieutenant.

INDIAN MEDICAL SERVICE

Majs. to be Lt.-Cols.: R. Sweet, J. R. D. Webb, F. Phelan, A. C. Macrae, and N. C. Kapur.

Lt. (on prob.) to be Capt. (on prob.): H. D. R. Zschperel.

The undermentioned Capts. (prov.) are confirmed in rank: J. H. Boultbee, P. L. O'Neill, H. S. Smithwick, and H. J. Curran.

The probationary appts. of the undermentioned are confirmed: To be Capts.: Gopal Das Malhoutra, Bantwal Panduranga Baliga, and Raghubansa Kishore Tandon, from I.M.S. (T.C.).

The undermentioned appts. are made: To be Capt. (on prob.): G. R. M. Apsey. To be Lts. (on prob.): W. H. G. Reed, T. E. Palmer, W. J. Poole, and C. J. H. Brink.

PUBLIC HEALTH SERVICES

London School-children

STUDY of the report for 1931 of Sir Frederick Menzies, as school medical officer for the county of London, indicates that the percentage of children referred for treatment (excluding dental caries) has fallen from 38 in 1911 to 18·5 in 1931; that the percentage of children referred for treatment of defects who were found satisfactory on reinspection has risen during the same period from 42·5 to 81·6; that the percentage found unclean at routine medical examinations has fallen from 9·8 to 0·5. The heaviest burden the school medical service has to bear is stated to be the poor condition of the children's teeth. At two of the residential homes transferred to the council's jurisdiction from former poor-law authorities, arrangements have been made for supervision of the children's teeth by dental surgeons; in all the other transferred homes some system of dental inspection was in existence. The dietary at residential institutions has also undergone reform. The council have drawn up a new diet sheet, presented in the form of a table of foods for each separate meal of the day, the choice of menu on any one day being left to the school authorities; this makes considerable variety possible, and authorities are particularly advised to avoid serving one specially dull item on the same day each week. A daily fruit ration is included in the diet. "In view of the fact," the report states, "that apples are our best medicofuge and have the property of leaving the mouth in a clean and wholesome state, the fruit ration is prescribed in the form of a definite amount of apple to be taken every day as the last item of food." Provision for open-air education includes nine day schools for non-tuberculous children, with accommodation for 1648 pupils, and six day schools for tuberculous children, with accommodation for 515 pupils; there are also five convalescent camp schools accommodating 484 children at a time for short periods, and 200 open-air classes in playgrounds and parks. During the year the experiment was made of taking children normally attending day schools for the mentally defective to a residential camp school. In June 25 boys went to the school, and in September 25 girls. The results were highly successful, the children appearing to benefit both physically and mentally. Dr. E. J. Boome, who reported on the scheme, thought that the advantage of it lay partly in the fact that it was confined to mentally subnormal children; probably if they had been sent to ordinary residential schools the results would not have been so good, owing to their sense of inferiority when with comrades of normal intelligence. In advising open-air classes for children selected on medical grounds a distinction is drawn between the bronchitic and the rheumatic type of child. Experience has shown that the bronchitic child thrives on open-air treatment of the sanatorium type, and the more exposure he gets the better he is, while the rheumatic child cannot stand such treatment and needs warmth and coddling. The report deals also with the inspection in higher education institutions, following up institutional care of children under 3 years of age, chronic invalidity, employment of school-children, stammering, the council's rheumatism and personal hygienic schemes, school journeys, nursery schools, child guidance, blind and deaf children, defective children, and infectious disease in schools. In all these departments the work of the school medical service is of public utility, and the money spent upon it in the nature of an insurance premium or sinking fund on a redeemable debt. We learn that during the latter part of the year any economies which could be made without impairing efficiency were effected. The service itself makes for economy in the long run.

Out-patient Clinics at Mental Hospitals

The Kent county mental hospital at Barming Heath was one of those which had established an out-patient clinic before the Mental Treatment Act gave statutory encouragement. This clinic, in common with most of its fellows, has been much appreciated by local practitioners, by relatives, and by patients. During the year 1931 treatment was sought by 37 new cases, many of them coming from a considerable distance, and most of them suffering from obvious mental disorder. Certification was advised for 11, 4 were admitted as voluntary patients, and 2 were referred to the mental deficiency authority. Of the 37, 15 were considered to have recovered before the end of the year. One of the integral factors in these out-patients' clinics is the social worker, who can visit the patients' homes, interview relatives and friends, and obtain a much-needed history to lay before the doctor, as well as interesting herself in the many personal problems of occupation and home that are not strictly medical and have yet such a wide influence on the mental state of the patient. At present the clinic at Maidstone is without this help, but the need is becoming more and more apparent. A similar clinic has been started in connexion with the Chartham Downs mental hospital at the Kent and Canterbury mental hospital, and is proving increasingly useful. The City of Leicester mental hospital also holds a successful weekly out-patient clinic where 112 attendances were recorded during 1931. Of these, 31 were recommended by local practitioners and 15 were admitted as voluntary patients to the mental hospital. This aspect of the work emphasised the need for a reception block; if out-patients are to be encouraged to enter the hospital when their condition requires it, they must be provided with some more attractive accommodation than a mixed ward. Other uses for the out-patient clinic are exemplified by the two patients who reported there while on trial-leave from the hospital, and two more who attended for antisyphilitic treatment after their discharge. Leicester is happy in having the services of a mental welfare worker.

Confidential Investigations of Maternal Deaths

In a memorandum (164/MCW) to maternal and child welfare authorities the Ministry of Health commends the proposal that the local inquiries into maternal deaths made by the Departmental Committee on Maternal Mortality and Morbidity should not be allowed to lapse, but should be continued on similar though less detailed lines. Discussions of fatal cases between medical officers of health and practitioners are held to have enabled the former to estimate the adequacy and elasticity of the local organisation for maternal welfare, and the inquiries are believed to have also a direct educational value. A new and simpler report form has been drafted, with space for an account of antenatal care and for a brief description of the labour and puerperium, and comments are invited on any subjects which have a bearing on the case. It is desired that deaths following abortion and deaths primarily due to intercurrent disease should be included among those investigated. As the inquiry is solely for scientific and public health purposes, the information obtained is to be regarded as strictly confidential.

Disposal of Condemned Food at a Port

At the port of Manchester the vigilance of the medical officer of health kept off the market over 125 tons of imported food which were found defective and condemned. The history of a large consignment of tinned fruit illustrates the well-worn maxim that sanitation pays, while it also indicates the difficulties that arise in port sanitary work. The fruit, which weighed about 60 tons, came from the Pacific, and was stowed near the boilers in two holds whose ventilation should have kept the temperature down, but bad weather hindered ventilation, and on arrival in December a large number of the tins were found blown (that is bulged) and containing hydrogen; some were even burst. Others, outwardly sound, were found on opening to have their contents darkened and to contain tin in amounts varying from 0·2 to 2·7 grains to the pound, suggesting prolonged heating to 149° F. at least. Which of the tins were thus decomposed could only be decided after individual opening and so the whole consignment had to be condemned. As the consignees objected, this involved two attendances of a magistrate, who confirmed the decision of the medical officer. Claim was then made for return of customs duties already paid, so the tins had to be destroyed under the supervision of both customs and port sanitary authority. Destruction proved difficult. The tins could not be burned, and to dump them at sea was expensive. In this difficulty the Ship Canal Company came to the rescue, allowing the whole to be buried in their sludge dump, where the tins were at last sunk out of sight in May, and got rid of. Want of sufficient ventilation in the vessel's holds thus gave six months of trouble to Manchester officials. As it also caused loss to owners and underwriters, we may expect improvement after so clear a demonstration that sanitation saves money.

MONAGHAN COUNTY HOSPITAL.—This institution, housed in what was formerly a jail, is to be replaced by a modern building, built largely out of sweepstake funds.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH

THE following are 1931 statistics of two county boroughs, two boroughs, and one urban district.

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 live births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality in childbirth.
Walsall .. (104,100)	19·5	11·3	1·03	1·15	2·0	2·2	74/35	24	2 9
West Bromwich (82,160)	20·7	12·1	0·80	1·28	2·8	2·0	86/31	38	4 7
Colchester .. (45,090)	15 0	11·5	1·06	1·66	1·3	2·1	48/—	26	0 0
Stafford .. (29,430)	11·8	11·5	0·71	1·18	1·9	2·0	63/34	29	5 7
Weston-super-Mare .. (27,310)	9·8	13·2	0·58	1·83	1·6	2·6	52/—	—	1 05

Registered stillbirths per 100 live births: Walsall 3·8, West Bromwich 4·5, Colchester 3·5, Stafford 5·2, Weston-super-Mare 4·5.

Walsall

Dr. J. A. M. Clark states that the borough extension on April 1st, 1931, added an area of 1297 acres and a population of 820 persons, and increased the number of houses lacking a piped supply of water and sewerage provision. The water from seven wells was analysed during the year, and five showed evidence of sewage pollution, while two were unsatisfactory. Of three springs examined, the water of one showed sewage pollution, and of another was unsatisfactory. As it is impracticable at present to supply the houses concerned from the public water-supply, the users of the water have been advised to boil it before use. Much attention has been given to checking the pollution of rivers and streams during the year. Two considerable sewerage schemes are in hand. There are over 4000 water-closets which have to be flushed by bucket. Rapid progress is being made in the substitution of bins for ashpits. Progress is being made with slum clearance, and a scheme covering 176 dwellings with a population of 937 is in hand.

There are now four hospitals under the control of the council, managed by three entirely separate committees. Dr. Clark indicates that effective coördination is lacking, and that his duties as principal medical officer to the public assistance committee are nominal only. The Manor Hospital (ex-poor-law) remains under the control of the public assistance committee. The admissions have increased from 1514 in 1929 to 2402 in 1931. The surgical work has increased tenfold in the last three years, and the proportion of acute work becomes continually greater. The confinements in the maternity department numbered 136 as compared with 83 in the previous year. The maternity ward has been transferred to the old nurses' home, but the department still lacks space, and the labour room is too small. The isolation hospital, which was opened in April, 1930, has experienced another very full year, and needs the addition of another ward of 25 to 35 beds. A further proposal to erect a block of 24 beds for tuberculosis awaits the approval of the Ministry.

Dr. Clark has much to say in praise of the new specially built infant welfare centre, situated in the middle of one of the housing estates, which was opened by the mayoress in June. The maternity and child welfare hospital has ten beds, and the demand far exceeds the accommodation provided. Out of the 150 infant deaths, 47 were recorded as due to prematurity, and Dr. Clark is at a loss to account for this high proportion, seeing that the rate for stillbirths is comparatively low. The first antenatal clinic was established in 1928, and the work has steadily increased. The first noticeable decline in the premature death-rate occurred in 1930. During 1931 the total births were 2034, and the new cases attending the four antenatal clinics numbered 619. No adequate provision has been made for the dental treatment of the mothers. The immunisation of children against diphtheria is being continued at the schools and welfare centres; 691 children were treated for the first time, and 921 who had been previously tested were retested. Of 573 children immunised during previous years, 76 again reacted to the test, whilst in 497 immunity had been established. During the past four years 7302 children and adults have been dealt with and 4900 immunised.

During the year a Salvation Army hostel for men was opened by the mayor. The building, formerly offices and workrooms, has been adapted for its purpose with admirable results, and provides accommodation for 120. The average number of beds occupied nightly is 107.

West Bromwich

Dr. J. Yule reports that the dovetailing of the new functions, taken over by the department under the Local Government Act, 1929, into previously existing duties has made good progress. Hallam Hospital (ex-poor-law) has rendered excellent service during its first complete year as a municipal hospital, not only to the borough but to neighbouring authorities. It has a complete specialist visiting staff, and about half of the 474 beds are used by West Bromwich. There were no deaths from scarlet fever or diphtheria during the year. Dr. Yule complains of the great delay in the notification of tuberculosis. During 1931 the new cases examined at the dispensary numbered 175 and the new contacts 89. The efficiency of the tuberculosis department has been greatly enhanced by the increasing use of the up-to-date X ray department at Hallam Hospital, and the services of the radiologist, Dr. G. E. Dyas. Good results are claimed for the ultra-violet light treatment, the plant for which is located at the dispensary. A complete orthopædic scheme with a clinic is one of the needs stressed.

There are six antenatal clinics, which were attended by 328 new cases. The total births numbered 1698. In addition to the clinics mentioned, antenatal and postnatal clinics, conducted at the Hallam Hospital by Mr. J. S. M. Connell, F.R.C.S., the visiting gynæcologist, now form an invaluable and integral part of the maternity scheme. Mental defectives are sent to Great Barr Park colony, which is under the joint control of Walsall and West Bromwich, but there is serious difficulty in obtaining admission for low grade cases to this colony. It is hoped that the sewerage of the borough will be satisfactory for a considerable period, after the expenditure of £37,000 for new sewers at Perry Bar, and of £112,000 on the outfall works. This new work will occupy about three years. Smoke abatement is not helped by the fact that the corporation "possess chimney stacks which are not beyond reproach."

Colchester

Dr. W. F. Corfield states that the isolation hospital was of great service to surrounding districts as well as the borough. The cases of diphtheria admitted were 78, and the number of deaths was unusually large—viz., 9, giving a case-fatality of 11·5 per cent. All the deaths were due to delay in the administration of antitoxin. Three cases died on the day of admission, and in two tracheotomy was performed, but both died some days after from heart failure. There were nine notifications of dysentery, one from military quarters, four from the Eastern Counties Institution, and four from military families living in the town. No origin could be found for the military case in a sergeant's child, but the mother and two other children were found to be harbouring dysentery bacilli, and also a child in the next bed in the military hospital. All the last-named cases recovered.

Mr. Ronald Reid, F.R.C.S., has been appointed consulting surgeon to the isolation hospital. The question of admitting cases from Harwich borough and Clacton U.D., the only two districts in the Tendring peninsula which do not at present use the hospital, is under consideration, and also the proposal the the Colchester small-pox hospital should receive cases from the whole of the north of the county. At the time of writing the new maternity home was almost ready for its first patient. The staff will consist of a matron, one sister and two nurses, all qualified midwives. New patients at the antenatal clinic numbered 103, the total births being 732. It is expected that the antenatal clinic will be more appreciated when it works in direct connexion with the new maternity home.

Stafford

Dr. J. T. Macnab states that the difficulty of housing the large family with the small income is still urgent, and that the low-rented pre-war house, which often has to be demolished in an improvement scheme, is in great demand. The owners of two houses appealed to the Ministry against the charges made by the corporation for renovation work done in default. The decision of the Ministry was in favour of the corporation, the appellants having to bear the cost of the inquiry. During the first half of 1932, the Stone-road site will be completed by the erection of 52 houses, and the Stafford common committee have been approached with regard to a site on the new common for the erection of 200 additional houses. In view of the fall in the birth-rate this provision may be sufficient for present needs, but there are still a number of very badly housed families, whose cases have not been met by any of the subsidised houses. During the year the Bradford system of controlled tipping has been introduced, and its successful working has enabled the replacement of the worn-out destructors to be postponed. Recent inspections show that there are 5735 water closets with flushing cisterns and 1678 waste-water closets. The latter give rise to a great deal of trouble from the occurrence of stoppages, but only 19 were converted to water-closets with flushing cisterns during the year.

There are in the borough 112 registered milk retailers for 6807 houses, an average of one retailer for 60 houses. Dr. Macnab finds that persons who have failed at other jobs and are often far from models of cleanliness endeavour to retrieve their fortunes by starting a small milk round. Every small street is visited by several milkmen, and he thinks that with better organisation all milk could be raised at least to Grade A standard without increase in cost to the public or fall in price to the producer. At least one of the retailers of Grade A milk visits the town only on alternate days.

There is no municipal maternity home, and Dr. Macnab would like to see an annex to the infirmary provided for the purpose. The new cases at the antenatal clinic number 36, the total births being 348. Sterilised maternity outfits are supplied at cost price (3*s.* and 6*s.* 3*d.*), but up to the present there is little demand for them.

Weston-super-Mare

Dr. A. E. Remmett Weaver reports that the maternity and child welfare scheme is carried on by a voluntary association which receives an annual contribution of £135, and the help of the assistant health visitor at all sessions. The antenatal clinic was attended by 58 new cases, the total births being 267. There is no maternity home or hospital in the district. At a meeting of the local medical profession it was decided that if the voluntary hospital were to admit antenatal cases for observation and complicated maternity cases for confinement, and if septic maternity cases were received in the isolation hsopital, no further institutional accommodation for maternity cases in Weston-super-Mare would be required. The voluntary hospital has agreed to accept these cases without charge until they have had experience of the effect of such admissions on their finances. Maternal mortality in Weston is a good illustration of the fact that one cannot judge the maternal mortality of a district with a small population for single years. During the ten years 1921–30 there were no maternal deaths from puerperal sepsis, and only nine from other puerperal causes, giving a total maternal mortality of 2·84 per thousand live births, as compared with 4·08 for England and Wales. During the ten years 1922–31, however, the maternal mortality in Weston was 3·92 as compared with 4·10 for England and Wales.

The inadequacy of the isolation hospital (18 beds) has been under consideration since the end of the war. Plans and estimates were submitted to the county council, but the health committee deferred consideration of the scheme.

PORT SANITARY AUTHORITY

Hull and Goole

IN his first report for 1931 to the port sanitary authority, Dr. Nicolas Gebbie states that 7094 ships from abroad arrived in the area, 5869 coastwise; 373 were inspected by a medical officer, 6939 by sanitary inspectors, a certain number coming in for double inspection. The total expenditure of the authority was £5150 of which £2114 was chargeable to the rates, four-fifths to Hull, one-fifth to Goole. The main inward trade was in provisions and oil, both vegetable and mineral. Water-supply for shipping is from deep wells and taken from water boats or hydrants on the dock-side; the 13 water boats were frequently inspected. The water storage tanks of 57 vessels required cleaning; of 22 samples of water from ships' tanks, only one had definite bacteriological (but undisclosed) evidence of contamination. No important infectious disease prevalence occurred. Of 53 cases of venereal disease discovered through inquiry on arrival, 41 attended the clinic in Mill-street. Rats totalling 8238 were destroyed; 6928 (all black) on ships, 1310 ashore (two-thirds brown). As to crew spaces, defects of original construction existed on 4 per cent. of the British, on 20 per cent. of the foreign ships examined, 230 (nationality unstated) had no water-supply to the crews' water-closets and 3 had no w.c. for them at all; defects by wear and tear were 912, slightly more numerous on foreign ships; nuisances by dirt and vermin were more prevalent on British ships, verminous bunks were "fairly numerous," 106; 1403 dirty and old beds were burned on board vessels. The 1403 beds were the straw-filled beds issued to seamen in many "tramps," and are constantly burned at end of voyages as the men leave. It is not stated whether all the 1403 came from British ships. No infectious cases were reported from any of the 863 canal boats. In the course of food inspection, over five million packages were examined, and 122 tons of fruit, 31 tons of shell-fish, 3 tons of wheat, and 1 cwt. of meat were declared unsound. Total aliens arriving at the port were 3627, none were rejected (certificated), and the standard of cleanliness of transmigrants is generally high.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 27TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 13 (last week 17); scarlet fever, 1038; diphtheria, 639; enteric fever, 53; acute pneumonia (primary or influenzal), 380; puerperal fever, 34; puerperal pyrexia, 93; cerebro-spinal fever, 24; acute poliomyelitis, 16; acute polio-encephalitis, 2; encephalitis lethargica, 10; dysentery, 15; ophthalmia neonatorum, 90. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on August 30th–31st was as follows:—Small-pox 22 under treatment (last week 21 and 3 under observation); scarlet fever, 1087; diphtheria, 1231; enteric fever, 12; measles, 442; whooping-cough, 422; puerperal fever, 21 (plus 8 babies); encephalitis lethargica, 229; poliomyelitis, 3; "other diseases," 112. At St. Margaret's Hospital there were 16 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 17 (2) from measles, 3 (0) from scarlet fever, 23 (6) from whooping-cough, 16 (1) from diphtheria, 77 (24) from diarrhœa and enteritis under two years, and 12 (1) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa were 32 more than in the previous week and were widely distributed over the country, the highest figures being Manchester 6, St. Helens 5, Leeds 4, Liverpool and Nottingham each 3. There has now been a clear quarter without the report of a death from small-pox. The fatal case of enteric fever occurred at Barking. Three of the deaths from measles were reported from Liverpool, 2 each from Gateshead, Newcastle-on-Tyne, Wigan, and Birmingham. Leeds and Sheffield each reported 3 deaths from whooping-cough. Diphtheria claimed 3 victims at Liverpool, 2 each at Croydon and Manchester.

The number of stillbirths notified during the week was 246 (corresponding to a rate of 36 per 1000 total births), including 29 in London.

MEDICAL NEWS

Royal Faculty of Physicians and Surgeons, Glasgow

At a recent meeting of the Faculty the following were admitted to the Fellowship: Thomas Symington Macaulay and Gopal Das Malhoutra.

Paddington Medical Society

A meeting will be held on Sept. 13th at the Great Western Royal Hotel, Paddington, at 9 P.M., when Dr. Frederick Dillon will read a paper on early signs of mental disorder and some practical difficulties connected therewith from the point of view of the general practitioner.

Nordrach-on-Dee Sanatorium

This sanatorium, at Banchory, is in liquidation, and the property is in the market. The site was chosen in 1899 by a committee of professors of medicine of the four Scottish universities, and this was the first specially built sanatorium in Scotland. It stands in 25 acres of grounds in a sheltered clearing among the pines, 400 feet above sea-level.

St. Mary's Hospital Medical School

The week-end post-graduate course will be held this year from Sept. 30th to Oct. 2nd. The morning session each day extends from 10.15 to 12.45, during which three lectures will be given. On each of the afternoons of Sept. 30th and Oct. 1st two lectures will be held between 2.15 and 4 P.M. The morning lectures on Sept. 30th will be on phlebitis, backache in women, and chronic affections of the appendix and gall-bladder, by Mr. A. Dickson Wright, Mr. Aleck Bourne, and Sir William Willcox. In the afternoon Mr. Leslie Williams will speak on anæsthesia and analgesia in obstetrics, and Dr. T. C. Hunt on some recent methods of treatment. On Oct. 1st Mr. Herbert Tilley will speak on purulent nasal discharges, Dr. Robert Hutchison on pink disease, and Dr. Reginald Miller on school problems in private practice, in the morning; while in the afternoon Dr. S. Vere Pearson will discuss modern developments in sanatorium treatment, and Mr. T. G. Stevens the causation and treatment of maternal injuries in childbirth. Sunday morning will be devoted to lectures on prostatic problems, by Mr. R. M. Handfield-Jones; the treatment of *B. coli* infections by a ketogenic diet, by Dr. C. M. Wilson; and some controversial points about appendicitis, by Mr. V. Zachary Cope. These meetings are open to all medical practitioners, without fee.

The annual dinner of past and present students will be held on Friday, Sept. 30th, at 7.30 P.M., at the Trocadero Restaurant. Sir Joseph Skevington will be in the chair.

King's College Hospital Medical School

On Oct. 1st, instead of the usual opening ceremony and inaugural address, an "intensive post-graduate course" will be held. Between 2 and 5.30 P.M. on that day a series of short lectures and demonstrations will be given, with half an hour's interval for tea at 4.30. The provisional programme is as follows: 2 P.M., Treatment of Coli Bacilluria and Pyelitis, by Mr. Yates Bell; 2.30, Asthma and Desensitisation, by Dr. J. L. Livingstone; 3.15, Practical Points in Gynæcological Cases, by Mr. W. Gilliatt; 3.45, lecture-demonstration, by Mr. Cecil Wakeley and Mr. H. L. C. Wood, on Injection Treatment of Varicose Veins; 5.0, Felton's Antipneumococcal Serum, by Dr. Douglas Firth. During the afternoon a demonstration of blood transfusion methods will be held in the pathological laboratory, and, between 3 and 4, Mr. John Everidge will give a lecture-demonstration in an operating theatre on the electro-coagulation treatment of enlarged prostate.

The post-graduate lectures, held last year at 9 P.M. on Thursdays, will be resumed this session, the first being on Oct. 13th, when Dr. Wilfred Sheldon will speak on Nervous Habits in Children. Subsequent lectures will be announced in our Medical Diary. These lectures are free to medical practitioners and to final year students of King's College Hospital.

The annual dinner of past and present students will be held on Oct. 1st, at 7.30 P.M., in the Connaught Rooms. Dr. Godfrey de Bec Turtle will preside.

Fellowship of Medicine and Post-Graduate Medical Association.

Two afternoon courses will take place from Sept. 12th to 24th: at the Infants Hospital in diseases of infants, and at the Royal Eye Hospital in ophthalmology. Other courses during September and October include medicine, surgery, and the specialties at the Westminster Hospital (Sept. 19th to Oct. 1st), Metropolitan Hospital (Oct. 3rd to 15th), and the Miller Hospital (Oct. 17th to 29th): dermatology at St. John's Hospital (Oct. 3rd to 29th); oto-rhino-laryngology at the Central London Throat, Nose, and Ear Hospital (Oct. 3rd to 29th); proctology at the Gordon Hospital (Oct. 3rd to 8th): diseases of the chest at the Brompton Hospital (week-end, Oct. 8th and 9th). A series of lectures on renal disease will be given on Tuesday afternoons at the house of the Medical Society of London, at 4 P.M., for Members. A week-end course in rheumatism will be given at Bath on Oct. 1st and 2nd. A course of evening lecture-demonstrations on physical medicine will be given at the London Light Clinic on Mondays and Wednesdays from Oct. 3rd to 27th, and an evening course of demonstrations on rheumatism will be held by the British Red Cross Clinic on Tuesdays and Thursdays from Nov. 8th to 25th. A week-end course in obstetrics will be given at the City of London Maternity Hospital on Oct. 29th and 30th. Further particulars may be obtained from the secretary of the Fellowship, 1, Wimpole-street, London, W.

Appointments

Certifying Surgeons under the Factory and Workshop Acts: SIMPSON, J. B. (Newmilns District, Ayr).

London County Council: CARVER, JAMES, M.B. N.U.I., F.R.C.S. Eng., medical superintendent, St. George-in-the-East Hospital, promoted medical superintendent, St. Mary Abbots Hospital, in place of Dr. A. Remington Hobbs, deceased.

Vacancies

For further information refer to the advertisement columns

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.

All Saints' Hospital, Austral-street, West-square, S.E.—Res. H.S. At rate of £100–£150. Also Hon. Anæsthetist.

Bangor, Caernarvonshire and Anglesey Infirmary.—Jun. H.S. £100.

[illegible]—Res. M.O. At rate of £150.

[illegible] O. At rate of £100.

[illegible]—H.S. At rate of £130.

[illegible] t. Ophth. H.S.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—H.P. At rate of £100.

Children's Hospital, Hampstead, College-crescent, Swiss Cottage, N.W.—Res. M.O. At rate of £100.

Colchester, Royal Eastern Counties' Institution, &c.—Res. Asst. M.O. £350.

Derby, Derbyshire C.C.—M.O. £600.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Asst. Radiologist for X Ray Dept. £100. Also Hon. Clin. Assts.

Fareham, Hants, Knowle Mental Hospital.—Second Asst. M.O. £550.

Glasgow Eye Infirmary.—Res. Asst. H.S. £150. Also Anæsthetist. £100.

Gloucester, Gloucestershire Royal Infirmary, &c.—H.S. At rate of £150.

Halifax Royal Infirmary.—Third H.S. £150.

Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—Cas. Surg. O. for Out-patient Dept. At rate of £100.

Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.

Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Kendal, Westmorland County Hospital.—H.S. At rate of £200.

Leeds, Jewish Herzl Moser Hospital, Leopold-street.—R.M.O. £200.

Leeds University.—Part-time Lecturer. £400.

Leicester Royal Infirmary.—Two House Surgeoncies. Each £125.

Liverpool, Walton Hospital, Rice Lane.—2nd Sen. Asst. Res. M.O. £350.

London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.

London Lock Hospital, 283, Harrow-road, W.—Res. M.O. At rate of £175.

National Hospital, Queen-square, W.C.—Hon. Dental Surgeon.

Newcastle General Hospital.—Part-time Surg. Reg. £250.

Newcastle-upon-Tyne Hospital for Sick Children.—H.P. Sen. and Jun. H.S. Each at rate of £100.

Oldham Royal Infirmary.—H.S. At rate of £175.

Oswestry, Shropshire Orthopædic Hospital, &c.—H.S. At rate of £200.

Portsmouth, Royal Hospital.—Sen. H.S. At rate of £175. Also H.P., Two H.S.'s and Cas. O. At rate of £130 and £100 respectively.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £75.

Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100. Also Ophthalmic Surgeon.

Royal Institute of Public Health, 23, Queen-square, W.C.—Asst. Bacteriologist.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. H.S. At rate of £150.

St. Helens County Borough.—Asst. M.O.H. £500.

St. Helens Hospital.—H.S. £200.

St. John's Hospital, Lewisham, S.E.—Res. H.S. At rate of £100.

St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.

Salford Royal Hospital.—Two H.S.'s to Special Depts. Each at rate of £125.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £175.

Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £100.

Southend-on-Sea General Hospital.—Hon. Physician to Electro-Therapeutic Dept. Also Res. H.P., H.S. and Cas O. Each at rate of £100.

Taunton, Taunton and Somerset Hospital.—H.S. At rate of £100.

Walsall General Hospital.—H.P. and Res. Asst. Pathologist. At rate of £150.

West Bromwich, Hallam Hospital.—Temporary Res. H.P. At rate of £200.

West Bromwich and District General Hospital.—Cas. H.S. £200.

West Ham County Borough.—Part-time Medical Practitioner for Maternity and Child Welfare Work. 1¼ gns. per session.

West London Hospital, Hammersmith-road, W.—H.P., Three H.S.'s, and Res. Anæsthetist. Each at rate of £100.

Westminster Hospital, S.W.—Medical Registrar. £150.

Wolverhampton, Royal Free Hospital.—H.S. for Ear, Throat, and Nose Dept. At rate of £100.

Worcester General Infirmary.—Pathologist. £400.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Westminster (County of London) and Westbury-on-Trym (County of Gloucester).

Births, Marriages, and Deaths

BIRTHS

THORNTON.—On August 29th, at "Lisnanagh," Forest Row, Sussex, the wife of G. Kennedy Thornton, M.B., of a son.

WHITE.—On Sept. 2nd, at Green Trees, Bassett, Southampton, the wife of Herbert Oakley White, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

MARRIAGES

CORMACK—BARRY.—On Sept. 1st, at Holy Trinity Church, Ayr, Robert Cormack, F.R.C.S. Edin., of Ayr, to Margaret Euphans, daughter of Mr. and Mrs. Kenneth Wolfe Barry, of Chelsea, London.

GIBSON—ORR.—On August 31st, at St. Saviour's, Walton-place, S.W., Beale Hepburn Gibson, M.R.C.S. Eng., L.R.C.P. Lond., to Mary, daughter of Commander H. J. Orr, R.N., and Mrs. Orr.

SHERIDAN—SPRAWSON.—On August 13th, at Ootacamund, South India, Captain Arthur Manus Sheridan, M.B., Ch.B. Glasg., I.M.S., to Theodora, daughter of Major-General C. A. Sprawson, C.I.E., V.H.S., I.M.S., Surgeon-General with the Government of Madras.

DEATHS

BARRON.—On August 30th, suddenly, at Redlynch, Burnham, Somerset, Thomas Walter Barron, M.A., M.B. Camb., aged 81.

LOUGHNAN.—On Sept. 1st, at New Milton, Hants, Michael Loughnan, L.R.C.P.I. & L.M., L.R.C.S.I., formerly of Rathmullen, Co. Donegal, in his 85th year.

STOTT.—On August 31st, at St. Andrew's-place, Lewes, Hugh Stott, J.P., M.R.C.S., L.R.C.P., D.P.H., Medical Officer of Health for East Sussex, aged 74.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

further institutional accommodation for maternity cases in Weston-super-Mare would be required. The voluntary hospital has agreed to accept these cases without charge until they have had experience of the effect of such admissions on their finances. Maternal mortality in Weston is a good illustration of the fact that one cannot judge the maternal mortality of a district with a small population for single years. During the ten years 1921–30 there were no maternal deaths from puerperal sepsis, and only nine from other puerperal causes, giving a total maternal mortality of 2·84 per thousand live births, as compared with 4·08 for England and Wales. During the ten years 1922–31, however, the maternal mortality in Weston was 3·92 as compared with 4·10 for England and Wales.

The inadequacy of the isolation hospital (18 beds) has been under consideration since the end of the war. Plans and estimates were submitted to the county council, but the health committee deferred consideration of the scheme.

PORT SANITARY AUTHORITY

Hull and Goole

In his first report for 1931 to the port sanitary authority, Dr. Nicolas Gebbie states that 7094 ships from abroad arrived in the area, 5869 coastwise; 373 were inspected by a medical officer, 6939 by sanitary inspectors, a certain number coming in for double inspection. The total expenditure of the authority was £5150 of which £2114 was chargeable to the rates, four-fifths to Hull, one-fifth to Goole. The main inward trade was in provisions and oil, both vegetable and mineral. Water-supply for shipping is from deep wells and taken from water boats or hydrants on the dock-side; the 13 water boats were frequently inspected. The water storage tanks of 57 vessels required cleaning; of 22 samples of water from ships' tanks, only one had definite bacteriological (but undisclosed) evidence of contamination. No [illegible] occurred [illegible]ed, it is an essential quality of one who practises an art to transfer his mental experience into other minds through whatever medium he happens to use. Thus it may be worth inquiring in what way doctors who regard medicine as an art demonstrate this quality. If one considers the medium—whether poetry, music, architecture, painting—through which artists work in order to project their minds into the minds of others, it will be found that it always has something which we can call "pattern." Similarly, normal people, who do not come under medical care, may be said to have a fairly normal pattern in their lives; it may not be an exciting pattern, but it is a good enough one for them. People who come to consult doctors, on the other hand, are aware that their lives are in some way being upset. In so far as we deal with them scientifically we treat them as objects of rational diagnosis and of rational or empirical treatment; but when we get beyond this relatively simple sphere of management we automatically fall back upon our art. It is then upon the way in which *we* behave to them, not so much upon how *they* react, that the restoration of their physiological and psychological pattern depends; the patient's personality becomes our canvas. The pattern which we leave there will correspond to some extent upon the pattern already existing in our own minds. To give a concrete example: if a doctor believes that most indefinite human ills can be attributed to intestinal poisoning, we shall find in his patients people whose interest is to a large extent centred in the frequency of their motions and the odour and reactions of their fæces—not a pattern which we should choose for any life that was dear to us. Or again, if he believes that most indefinite ills are due to sexual causes, he is liable to produce in the minds of his patients an introspective sexual outlook on life, which he could certainly never choose to produce in a member of his own family. One may see patterns of all kinds in the lives of patients whose troubles are not due to

lethargica, 10; dysentery, 15; ophthalmia neonatorum, 90. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on August 30th–31st was as follows:—Small-pox 22 under treatment (last week 21 and 3 under observation); scarlet fever, 1087; diphtheria, 1231; enteric fever, 12; measles, 442; [illegible] puerperal fever, 21 (plus 8 babies); [illegible] 229; poliomyelitis, 3; "other d[illegible] Margaret's Hospital there were 16 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 17 (2) from measles, 3 (0) from scarlet fever, 23 (6) from whooping-cough, 16 (1) from diphtheria, 77 (24) from diarrhœa and enteritis under two years, and 12 (1) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa were 32 more than in the previous week and were widely distributed over the country, the highest figures being Manchester 6, St. Helens 5, Leeds 4, Liverpool and Nottingham each 3. There has now been a clear quarter without the report of a death from small-pox. The fatal case of enteric fever occurred at Barking. Three of the deaths from measles were reported from Liverpool, 2 each from Gateshead, Newcastle-on-Tyne, Wigan, and Birmingham. Leeds and Sheffield each reported 3 deaths from whooping-cough. Diphtheria claimed 3 victims at Liverpool, 2 each at Croydon and Manchester.

The number of stillbirths notified during the week was 246 (corresponding to a rate of 36 per 1000 total births), including 29 in London.

MEDICAL NEWS

[illegible] applies himself to [illegible] patients, often with great success,

Royal Faculty [illegible] he is, he is *not* interested in what he [illegible]ther contemptuously calls the patient with nerves, unless he can persuade himself that there is a definite physical cause to which he can apply his energies. His simplest plan is to find a course of treatment which will satisfy his mind and that of his patients that *something* is being done for them; but, as we know too well, the benefit of every new departure is liable to cease when its effect on the patient's mind has worn off, and some new gesture is required. The man of action finds it difficult to treat successfully patients with "nerves," and to restore them to normal and active life.

THE AVOIDANCE OF MENTAL WARFARE BETWEEN DOCTOR AND PATIENT

The psychologists have done a great service in endeavouring to define the normal pattern of a man's or a woman's life—the various stages through which they pass, how they are at one stage tied to the mother, at another to the father, at another to the companion at school. While it is a matter of common sense to see how this man or that woman has been deprived of certain influences upon the pattern of their lives—e.g., the boy who has never been sent to school, or the only child who has never grown away from parental influences and never acquired initiative—it is much harder to trace these effects in the minds of neurotics, where the whole personality has got overlaid with quasi-physical symptoms, and tragic events have passed into the unconscious.

There is much scepticism upon the efficacy of any psychological methods among practitioners who are primarily men of action (or extraverts as some prefer to call them). While no practitioner can be expected to acquire the technique of unravelling intricate psychological threads, he should be able to acquire a sense of his patients' difficulties, of the spoiled patterns of their lives, and to try to help them. It is difficult to believe that any purely "nervous" state can be permanently helped by physical suggestion; symptoms can be temporarily ameliorated by sedative drugs, but, for example, as Dr. Crichton Miller has pointed out, hypnotics, while

King's College Hospital Medical School

On Oct. 1st, instead of the usual opening ceremony and inaugural address, an "intensive post-graduate course" will be held. Between 2 and 5.30 P.M. on that day a series of short lectures and demonstrations will be given, with half an hour's interval for tea at 4.30. The provisional programme is as follows: 2 P.M., Treatment of Coli Bacilluria and Pyelitis, by Mr. Yates Bell; 2.30, Asthma and Desensitisation, by Dr. J. L. Livingstone; 3.15, Practical Points in Gynæcological Cases, by Mr. W. Gilliatt; 3.45, lecture-demonstration, by Mr. Cecil Wakeley and Mr. H. L. C. Wood, on Injection Treatment of Varicose Veins; 5.0, Felton's Antipneumococcal Serum, by Dr. Douglas Firth. During the afternoon a demonstration of blood transfusion methods will be held in the pathological laboratory, and, between 3 and 4, Mr. John Everidge will give a lecture-demonstration in an operating theatre on the electrocoagulation treatment of enlarged prostate.

The post-graduate lectures, held last year at 9 P.M. on Thursdays, will be resumed this session, the first being on Oct. 13th, when Dr. Wilfred Sheldon will speak on Nervous Habits in Children. Subsequent lectures will be announced in our Medical Diary. These lectures are free to medical practitioners and to final year students of King's College Hospital.

The annual dinner of past and present students will be held on Oct. 1st, at 7.30 P.M., in the Connaught Rooms. Dr. Godfrey de Bec Turtle will preside.

Fellowship of Medicine and Post-Graduate Medical Association.

Two afternoon courses will take place from Sept. 12th to 24th: at the Infants Hospital in diseases of infants, and at the Royal Eye Hospital in ophthalmology. Other courses during September and October include medicine, surgery, and the specialties at the Westminster Hospital (Sept. 19th to Oct. 1st), Metropolitan Hospital (Oct. 3rd to 15th), and the Miller Hospital (Oct. 17th to 29th); dermatology at St. John's Hospital (Oct. 3rd to 29th); oto-rhino-laryngology at the Central London Throat, Nose, and Ear Hospital
by doctors, do not [illegible]ology at the Gordon Hospital
patients as do general practit[illegible]chest at the Brompton
among others, practitioners should [illegible]series of lectures
to elucidate certain points, but should never, [illegible] the
when asking the help of the psychological special[illegible]or
hand over the general management of the patien[illegible]n
life to him, for this is a responsibility which cannot properly be delegated.

It must never be forgotten that medicine is still an extremely inexact science, with certain refreshing exceptions. We do not know why one case of pulmonary tuberculosis will go steadily downhill from the start, while another, diagnosed comparatively late, will develop a life-saving fibrosis; nor can we foretell that one primipara will have a baby in two hours and another only in two weeks. Consequently, where we get to cases where genuine scientific data are few or absent, we should expect a still greater irregularity in the course they run and in our prognosis; and it is here, of course, that we fall back unconsciously upon what is termed the art of medicine. And although, like other arts, the best work is no doubt done instinctively, yet there is much to be learned from getting to know what sort of people we are dealing with in each case. This art is required to a large extent even when there are definite physical indications. Can we type our patients also in respect of their mental pattern? I think we can, so long as we have patience with people whose psychological type does not happen to correspond with our own. In the first place, the extraverted and introverted types should be recognisable to some extent in most patients with good effect. It is characteristic of an introvert to brood; thus it is not of the slightest use for an extravert doctor to leave the patient with the dictum, "Don't brood." It is better for him to suggest some occupation in keeping with the sort of subjects in which the patient is in natural sympathy—for example, people disappointed of childbearing may adopt a child with great success. The introvert, it must be remembered, must be made to extravert himself, to restore the balance. A much harder problem is to get the extravert neurotic better; it is of no use to say to him, "Don't do so much," or "Rest more." Keeping still outside the limits of normal physiological rest is as wretched to him as

Halifax Royal Infirmary.—Third H.S. £150.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—Cas. Surg. O. for Out-patient Dept. At rate of £100.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Kendal, Westmorland County Hospital.—H.S. At rate of £200.
Leeds, Jewish Herzl Moser Hospital, Leopold-street.—R.M.O. £200.
Leeds University.—Part-time Lecturer. £400.
Leicester Royal Infirmary.—Two House Surgeoncies. Each £125.
Liverpool. Walton Hospital, Rice Lane.—2nd Sen. Asst. Res. M.O. £350.
London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.
London Lock Hospital, 283, Harrow-road, W.—Res. M.O. At rate of £175.
National Hospital, Queen-square, W.C.—Hon. Dental Surgeon.
Newcastle General Hospital.—Part-time Surg. Reg. £250.
Newcastle-upon-Tyne Hospital for Sick Children.—H.P. Sen. and Jun. H.S. Each at rate of £100.
Oldham Royal Infirmary.—H.S. At rate of £175.
Oswestry, Shropshire Orthopædic Hospital, &c.—H.S. At rate of £200.
Portsmouth, Royal Hospital.—Sen. H.S. At rate of £175. Also H.P., Two H.S.'s and Cas. O. At rate of £130 and £100 respectively.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £75.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100. Also Ophthalmic Surgeon.
Royal Institute of Public Health, 23, Queen-square, W.C.—Asst. Bacteriologist.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. H.S. At rate of £150.
St. Helens County Borough.—Asst. M.O.H. £500.
St. Helens Hospital.—H.S. £200.
St. John's Hospital, Lewisham, S.E.—Res. H.S. At rate of £100.
St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.
Salford Royal Hospital.—Two H.S.'s to Special Depts. Each at rate of £125.
Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £175.
Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £100.
Southend-on-Sea General Hospital.—Hon. Physician to Electro-Therapeutic Dept. Also Res. H.P., H.S. and Cas O. Each at rate of £100.
Taunton, Taunton and Somerset Hospital.—H.S. At rate of £100.
Walsall General Hospital.—H.P. and Res. Asst. Pathologist. At rate of £150.
West Bromwich, Hallam Hospital.—Temporary Res. H.P. At
for us to apply this method in some [illegible] H.S. £200.
to neurotics than is generally imagined. The selection of the particular form best adapted to any individual patient is one of the ways—but only one—in which the art of medicine may manifest itself. It illustrates well the conception of the art of medicine as I understand it—the art of applying to a patient the personality of the doctor, and the effect of a psychological affinity between patient and doctor upon the pattern of the life of both of them, but especially on the pattern of the life of the patient.

LIESEGANG RINGS

ABOUT thirty-six years ago Liesegang, in staining some histological material by the Golgi method, discovered that the banding phenomenon there observed was an artefact produced by the interaction of silver nitrate and potassium bichromate. He showed this by placing a drop of silver nitrate solution upon a film of gelatin containing potassium bichromate when the now familiar concentric rays of silver chromate were deposited at increasing distance from each other as their distance from the centre increased. This was the beginning of the study of the general phenomenon associated with the name of Liesegang. The subject has attracted the attention of chemists, physicists, geologists, and biologists, all of whom have sought for a common explanation of the banded phenomenon occurring in their own particular field, but, as yet, no universal explanation is forthcoming, and it may well be that otherwise similar phenomena may be brought about by a variety of causes. The ignoring of this possibility has led some authors to describe as Liesegang rings due to internal causes some forms of rhythmic banding which are clearly due to external causes—such as diurnal or seasonal changes. A large amount of literature has grown up around this subject and the bibliography at the end of a book recently published by E. S.

Hedges, D.Sc.,[1] gives 482 references. This book contains a chapter on properties of colloidal media, before discussing the Liesegang phenomenon and the theories which attempt to explain it. The two following chapters are concerned with periodic diffusion structures without chemical reaction. In this connexion it may be noted that the author objects to the description of the reactions which produce Liesegang bands as "rhythmic reactions," since there is nothing to suggest that the reactions are periodic; the periodicity is spacial, not temporal. Periodic reactions are those in which the reaction velocity varies periodically, while Liesegang bands are periodic structures. One of the most interesting chapters is that in which Dr. Hedges has assembled a motley collection of periodic structures of natural origin which are presented with the aim of helping "physical-scientists and biologists towards an A reciation of the other's point of view." The book impre first one in the English language devoted to that he ous phenomenon.

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CHOLERA IN SHANGHAI

Wu Lien Teh's account [2] *of the cholera epidemic* Shanghai in 1931 is of special interest owing to ne fact that it was only in July, 1930, that the Chinese National Quarantine Service took over the control of port health work at Shanghai from the Maritime Customs Department. A precedent for this change existed in the post office, which also was originally administered by the customs authorities, but was transferred to the national postal department in 1911. It is said that great developments have occurred in the latter instance, and Dr. Wu is able to show that much progress has similarly been made in sanitation and quarantine arrangements in the short period since the new government department, of which he is the head, came into being. The transfer of control, he says, has been effected smoothly and satisfactorily, and the customs authorities and representatives of shipping interests, many of whom of course are Europeans, have rendered every support and assistance. To form a purely Chinese administration of this kind in earlier times would have been impossible, but in the last 30 years a new generation of doctors has come into existence, many of whom have studied in the best colleges of Europe, America, and Japan, as well as China. The Ministry of Health had the assistance of Dr. C. L. Park, head of the quarantine service of Australia, and chief of the epidemiological division of the health section of the League of Nations, in drawing up their new regulations. China has ratified the international sanitary convention of Paris, and every effort has been made to keep abreast of the times, and to reconcile the different and often conflicting interests of an international port.

Cholera occurs to some extent in Shanghai every year but, judged by Indian standards, few of the epidemics have been really serious. The chief significance of the outbreaks has lain in the importance of the port from the shipping point of view. The population of Shanghai in 1931 is given as 3,027,419. In the last ten years the worst epidemic, that of 1929, accounted for 3571 cases, with 313 deaths, and in 1924 only 12 cases occurred. In 1931 there were 482 cases, with 57 deaths. Noteworthy features were the diffuse nature of the outbreak, the foreign concessions showing almost as great a percentage of cases as Greater Shanghai, and the low death-rate, which only amounted to 11·8 per cent. Extensive floods occurred in the Yangtze valley in the autumn, and many refugees were assembled in camps, where things would have been much worse if early precautions had not been taken against the disease. With regard to the origin of the epidemic, Dr. Wu is of opinion that the densely populated Shanghai district must now be regarded as an endemic area, although attention should be directed to the old and crowded city of Ningpo, only one night's journey by steamer, where infection has been known to exist for centuries. On the present occasion the precaution was taken of inoculating the crews and passengers of all vessels coming from Ningpo. In the Shanghai area, the three sanitary authorities—those of the International and French concessions and Greater Shanghai—coöperated to carry out prophylactic measures. Extensive campaigns of propaganda were initiated, enlisting the help of scouts and guides, and inoculation was pressed. Apparently there is little objection on the part of the Chinese to inoculation. Cases were investigated, wells disinfected, and supplies of medicine issued free to the sick. Where the water-supply was known to be defective public artesian wells were opened. In the whole area 761,279 inoculations were performed; it is stated that of the 482 persons attacked by the disease not one had been inoculated.

OPEN-AIR AND COVERED SWIMMING POOLS

GOVERNMENT assistance to local authorities has encouraged the provision of public bathing pools during the past few years. Mr. H. R. Austin, writing in *Municipal Engineering* of Sept. 1st, mentioned the large number of authorities who have limited their schemes to the construction of open-air pools. Bathing in the open air is undoubtedly much more pleasant than bathing in an enclosed swimming bath, but our climate makes it a luxury to be enjoyed rarely, except by the hardiest; this at least appears to be the usual experience of bathing pool authorities. Mr. Austin considers that in an urban community the swimming bath should have "a definite place (*a*) as a centre for physical training of a special kind, and (*b*) as an area for exercise, recreation, and sport." To fulfil these functions he thinks that the bath should be in use during the day for the instruction of school-children in swimming, and during the evening there should be opportunity for both sexes to practise. It is impossible to carry out this full programme in an open-air bath all the year round. It is true that six hot days in the year will bring in a revenue from an open-air bath which makes a fair showing in the annual accounts, but this does not mean, necessarily, that it meets the needs of the district. Mr. Austin thinks that the solution lies in providing a comparatively small covered pool which can be used all the year round, in a central position, and a large open-air bath which could accommodate hundreds on infrequent occasions. It should not be beyond the ingenuity of those concerned to devise a swimming bath with a sliding roof, or when the pool is in pleasant surroundings, with detachable walls on the south and west sides, so that in really warm weather the swimmer can have the added amenities which make open-air bathing immeasurably more attractive than a plunge in a closed swimming bath, however well devised.

Medical Diary

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street. W.

MONDAY, Sept. 12th, to SATURDAY, Sept. 17th.—INFANTS HOSPITAL, Vincent-square, S.W.1. Every afternoon. Course in Diseases of Children. Lectures and demonstrations.—ROYAL EYE HOSPITAL, St. George's-circus, S.E. Every afternoon. Course in Ophthalmology, lectures and demonstrations.—(Courses open only to Members of the Fellowship.)

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Sept. 9th.—4 P.M., Mr. N. Asherson: Indications for Operating on the Mastoid.

FRIDAY, Sept. 16th.—4 P.M., Mr. A. Lowndes Yates: Emergency Operations in the Throat, Nose, and Ear.

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[1] Liesegang Rings and other Periodic Structures. By Ernest S. Hedges, D.Sc. Lond., M.Sc., Ph.D. Manch., A.I.C., late Darbishire Fellow of the University of Manchester. London: Chapman and Hall, Ltd. 1932. Pp. 122. 10s. 6d.

[2] Reports of the National Quarantine Service, Series II. Edited by Wu Lien Teh and Wu Chang Yao. National Quarantine Service, Shanghai.

ADDRESSES AND ORIGINAL ARTICLES

THE
BRONCHOSCOPE IN THE TREATMENT OF PULMONARY SUPPURATION

By A. J. Scott Pinchin, M.D., F.R.C.P. Lond.

PHYSICIAN TO CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, VICTORIA PARK; TO WEST LONDON HOSPITAL; AND TO HAMPSTEAD GENERAL HOSPITAL

AND

H. V. Morlock, M.C., M.D., M.R.C.P. Lond.

ASSISTANT PHYSICIAN TO CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS; TO MILLER GENERAL HOSPITAL; AND TO HAMPSTEAD GENERAL HOSPITAL

In a recent paper[1] we published an account of the diagnostic uses of the bronchoscope in pulmonary diseases, and called attention to the fact that we were using bronchoscopic drainage as a therapeutic measure in the treatment of acute and chronic pulmonary suppuration. In the present paper we propose to report on the results of this form of treatment in pulmonary suppuration.

Abscess of the Lung

Some two years ago we reported[2] on the treatment of a series of 27 acute and chronic lung abscesses. Of the acute ones, when treated by general medical measures, only 68 per cent. healed; 20 per cent. became chronic and required surgical measures; and 12 per cent. died. Of the chronic ones, but a single success was obtained by medical treatment alone. The surgical treatment yielded a 43 per cent. mortality. Since publication of that article we have had more chronic cases dealt with by surgical measures, and at present the figures stand as follows: healed, 65 per cent.; mortality, 35 per cent.

The results in the acute cases were comparatively sfactory, but the results of the chronic cases left be desired.

ch reports from abroad suggested that fit might accrue from bronchoscopic ir authors as a whole did not seem pressed with this method; Chevalier s visit to this country impressed on us, description of results attained, that it might possible to do much in this direction—even more than he claimed for the method. Despite Jackson's good results, reference to Baumgartner's[3] and also Lilienthal's[4] recent brochures shows that the surgical mind still regards bronchoscopic methods as very much of a side-line in treatment. It appeared to us that the physician in charge of the case should be in the best position to determine its suitability for bronchoscopy, and, if necessary, also to carry out the treatment; for, as we have found, to get good results it is essential that the chest should be examined carefully and frequently during the course of treatment lest any extension of the disease or other complication occur.

We therefore inaugurated at Victoria Park Hospital a bronchoscopic clinic for dealing with these cases, though we may frankly say we expected nothing dramatic in the way of results. In our efforts we have been fortunate in securing the goodwill of our colleagues, who have greatly helped by allowing us to treat some of their patients by this method.

In recording these results in a condition which, even if not becoming actually more frequent, is certainly becoming more frequently recognised, it is our intention to stress the value of bronchoscopic treatment; at the same time we do not in any way put forward the dogma that all cases should be thus treated. One can but submit results.

We recognise that it is possible that we may have been fortunate in the cases which have come to us, though many of these were of long duration, up to two years; further, in the case of abscess it is impossible to say at what period a cure has been obtained, for the cure rests in the end in the healing of a cavity, and as long as a cavity remains there is danger of the mucous membrane becoming reinfected and the disease lighting up again; on this account, if cures are counted after an arbitrary period of say six months, recurrences may occur in the seventh rendering the figures fallacious.

In the case of surgical cures the same thing happens. The abscess may recur, or sinuses, &c., may remain, which may light up and render further operation necessary, and by this and other complications lead to the death of the patient.

When therefore we speak of a cure, we indicate that a patient, who has come to us a very sick person (and there are few patients more sick than those suffering from the toxæmia and cough of a chronic lung abscess), is brought again to a condition of health, with no foul sputum or evidence of a residual toxæmia, and a radiogram which shows little evidence of infective processes going on in the lung. As our treatment of these cases has extended only over a period of 18 months, and some are still in process of cure, and as it has to be continued often in very chronic cases for six months, we can only reckon as complete cures those cases who came during the first 12 months of this time.

The consensus of opinion is that an acute case failing to heal in two to three months should be referred for surgical intervention; but we find that, *if free drainage can be obtained in any way*, the abscess will heal, and it is the possibility of obtaining free drainage by means of the bronchoscope that enables a cure to be made by this method.

METHOD OF TREATMENT

During the last 18 months we have treated 8 acute and 17 chronic cases by bronchoscopic drainage and lavage. In dealing with these cases, our mode of procedure is as follows:—

In a case suspected of abscess, an ordinary radiogram is first taken antero-posterior and lateral, and sometimes oblique as well, and if this gives any evidence of abscess a lipiodol radiogram may be taken, but if the case is to be bronchoscoped this is usually inadvisable because it spoils the result of any local injection by this means. Radiography without lipiodol may show evidence of an abscess or not; if it does it gives some idea as to the area in which it is to be sought in the bronchial tree. Four of our cases showed no evidence of abscess, though it was suspected clinically.

On passing the bronchoscope in any case in which the site is not known, the whole bronchial tree is systematically inspected, commencing with the right bronchus, since abscess is more frequent on this side. If pus is seen coming from any bronchus this branch is explored with the suction tube, and, if not, all the smaller bronchi are explored in turn. Sometimes with a chronic abscess which is not draining one succeeds in drawing off a quantity of very offensive altered blood and pus on the first occasion. If communication with a bronchus has not been naturally established, an opening may be made by this method; in fact, so far we have had no case in which we have not been able to get into communication with the abscess, the only one presenting any difficulty being a case in which the abscess was draining down the ascending branch of the right upper lobe bronchus; with the retrograde telescope we could see the pus coming down this bronchus, but no tube could be passed directly up it.

Having found pus, a smear is made on a microscopical slide and allowed to dry for examination for the presence of spirochætes—a method suggested to us by Dr. Roodhouse Gloyne—and an uncontaminated specimen of the pus sent for bacteriological investigation.

A small quantity of lipiodol is then injected down the drainage-tube directly into the abscess cavity, but the amount must correspond with the suspected size of the abscess cavity, as if too much is injected massing of lipiodol in the alveoli obscures the picture. The patient is then radiographed again (antero-posterior and lateral), and the exact position of the abscess is defined. These pictures are invaluable if surgical procedures become necessary. At the next therapeutic bronchoscopy the exact position of the abscess is already known, the bronchus of drainage can be discovered and dilated—or the œdematous granulation tissue surrounding and obstructing can be cauterised—and a drainage-tube can be inserted. Pus is aspirated via this tube by means of a suction pump, the cavity is then washed with a small quantity of antiseptic saline solution; and, finally, 10–20 c.cm. of 10 per cent. Gomenol is instilled and left there; or, if the sputum contains spirochætes, a solution of novarsenobillon is substituted for the gomenol.

Table showing Results of Treatment

Case No	Date admitted.	Sex.	Age.	Lobe involved.	Length of history (months).	Ætiology.	No. of treatments.	Result.
						Acute abscess		
1	3/1/31	M	20	R.L.	1	Post-influenzal.	4	Cured.
2	31/1/31	F	48	R.L.	1	Hydatid liver.	3	,,
3	30/5/31	M	42	R.L.	1	Primary.	7	,,
4	12/9/31	F	46	R.M.	3	Tooth extraction.	16	,,
5	23/1/32	F	16	R.L.	1	Primary.	4	,,
6	6/2/32	M	30	L.L.	1	Abdominal op.	7	,,
7	9/5/32	M	25	R.U.	1¼	Tonsillitis.	3	Healing.
8	9/5/32	F	10	R.U.	1½	Tonsillectomy.	3	Cured.
						Chronic abscess		
9	10/1/31	M	35	R.L.	16	Primary.	26	Cured.
10	21/2/31	M	38	R. apex.	4	,,	10	Op. Cure.
11	14/3/31	M	40	R.L.	6	,,	14	Cured.
12	1/4/31	M	17	R.L.	4	,,	9	,,
13	18/4/31	M	30	R.L.	24	,,	8	,,
14	9/5/31	M	38	R.M.	18	,,	28	Healing.
15	18/6/31	F	35	L.L.	18	Tonsillectomy.	26	Cured.
16	1/8/31	M	27	R.M.	12	Primary.	6	,,
17	7/11/31	M	45	R. apex.	19	,,	12	,,
18	20/11/31	M	47	L.L.	6	Post-influenzal.	16	,,
19	28/11/31	F	28	L.L.	6	Tonsillectomy.	9	,,
20	2/1/32	M	47	L.U. and L.	12	Primary.	15	Healing.
21	14/1/32	F	48	R.L.	24	Tooth extraction.	9	Cured.
22	18/3/32	M	40	L.L.	18	Primary.	8	Healing.
						Abscess with bronchiectasis		
23	24/1/31	F	36	R. apex.	48	Abdominal op.	15	Imp.
24	4/7/31	F	40	L.U.	24	Primary.	14	,,
25	10/5/32	M	34	L.L.	6	,,	10	No imp.

R.L., R.M., and R.U.= Right lower, middle or upper lobe respectively. L.L. and L.U.= Left lower or upper lobe. Op.= operation. Imp.= improvement.

At first, in the acute cases, this bronchoscopic treatment is repeated twice weekly, and it is usually found that about five are sufficient to cause the abscess to heal. In our series the least number required was 3, the greatest 16, and the average 6. In the chronic cases the treatment is repeated at weekly intervals, but in these cases the number of treatments required is very considerably greater than in the acute cases, the least being 8, the greatest so far 28, and the average 14, although Jackson has reported a case which healed after 70 treatments.

RESULTS

On these lines we have treated eight *acute cases*, of which seven are healed and the eighth is well on the way to cure. This is a very small series, but it would suggest that bronchoscopic drainage in acute cases produces better results than general medical treatment alone.

Of 14 *chronic cases* ten are healed, three are likely to heal in view of past experience, and one was referred to the surgeon. It will thus be seen that in chronic lung abscess bronchoscopic drainage offers more chance of success, with smaller mortality, than surgical measures.

The Table includes all cases of abscess which we have systematically treated. There have been no deaths in our series, though there is doubtless an element of good fortune in this, since any case of lung abscess may develop a cerebral abscess or other troublesome complication.

NOTES ON SOME CASES

CASE 9.—Had an abscess draining from the internal division of the terminal lower lobe bronchus on the right, the abscess was in the angle of the diaphragm and the mediastinum; surgical exploration had failed to locate the abscess, phrenic avulsion and artificial pneumothorax had also been tried without result.

CASE 10.—A right apical abscess which was progressing well and, judging by other cases, would probably have healed by bronchoscopy. He was one of our early cases at a time when we were still doubtful as to results. He desired an operation, and being an eminently suitable case for surgery we asked Mr. R. H. O. B. Robinson to operate; he made a good recovery.

CASE 14.—Is now practically dry, but cannot yet be classed as cured.

CASES 18 and 20.—Were transferred from a general hospital after phrenic avulsion, which had made them worse. Case 20 had several abscesses, and seemed a quite unlikely case to improve; there is, however, every prospect of a cure, and he is back at his work, which is of a hard manual character.

CASES 23, 24, 25.—As in simple bronchiectasis cure can scarcely be expected in this type of case, but it is possible to ameliorate the condition.

In Case 23 surgical operation has been refused, and Cases 24 and 25 are unsuitable for surgery.

Four other cases of lung abscess have come under our observation during the last 18 months in which bronchoscopic treatment was not indicated.

A woman with 18 months' history who had absolutely refused all treatment for six months. She was finally admitted with a secondary empyema which was drained by Mr. Robinson; she was making a good recovery, but the day she was going out of hospital died suddenly of pulmonary embolism.

A man with secondary empyema treated by extensive resection of rib and drainage. Recovered.

A man with cerebral symptoms who died of a secondary cerebral abscess.

A child of 7. Influenzal pneumonitis, followed by a large hæmorrhage and abscess formation. Recovered on medical treatment.

Bronchiectasis

The number of abscesses we have had for treatment in the last 18 months, with other cases for diagnosis and treatment, has necessitated 650 bronchoscopies, and time has not permitted of us taking on more than a limited number of bronchiectases. We have seen 30 of these during the period, and have regarded most of them as quite unsuitable for curative treatment, though all of them are undoubtedly better for regular lavage and drainage. The idea that one or two bronchoscopies can cure a bronchiectasis is, of course, quite absurd, considering the pathology of the disease, but there is no doubt that with regular drainage, lavage, and antiseptic medications, the condition of the patient can up to a point be very much improved by this means. We have been able to improve the condition of those patients treated regularly so that they have been able to resume their employment.

METHOD OF TREATMENT

At the commencement of treatment an ordinary lipiodol examination with 40 c.cm. of lipiodol is given to ascertain the extent of the bronchiectasis. In those cases in which a small area only is suspected this can best be done via the bronchoscope by means of which localised areas can be delineated without flooding the rest of the lung. In some cases, when obstruction has taken place from œdema of the mucous membrane high up the bronchial tree, the greater part of the lung may be full of pus, and this can be cleared at the first drainage and lipiodol injected.

On examination of the case bronchoscopically it is noted from which bronchi the pus is coming, this part is as far as possible sucked dry, and the drainage-tube or dilator passed down the various subdivisions of the bronchi to give free exit to the pus. If the cavities are large, saline antiseptic solutions may be used for washing out. We then usually inject gomenol, or when spirochætes are present a solution of N.A.B., which is also used intravenously.

This course is carried out each week for about two months, after which the treatment may be gradually reduced. Some of our patients now come only every six weeks for treatment.

It cannot be suggested there is much possibility of final cure; for these fibrosed sacs to close would take a very long while, and is almost too much to expect.

The use of lipiodol may be of considerable service in the following way. When lipiodol is injected into the bronchial tree, on account of its density it finds the lowest level, displacing the secretion from the most dependant parts in which it has become completely stagnant; but this is purely mechanical, and lipiodol has little antiseptic effect. Antiseptic solutions injected only lie on top of the secretions. In an endeavour to obtain the gravity effect of lipiodol, with an antiseptic effect, we have used lipiodol with 10 per cent. gomenol added, and by this means the antiseptic is carried to the lowest part of the diseased area, and has a very salutary effect. Whatever the means employed, the result is that the mucous membrane of the bronchi above the lesion recovers in health, and the cough reflex is re-established. Though, as before stated, we cannot prove that frequent lavage will go far in curing a chronic bronchiectasis, until cases have been watched for some years, yet we are able to produce a condition of health so that the patient can carry on his occupation and cease to be an offence to his neighbours.

OTHER REMEDIAL MEASURES

Against this result we must consider the other methods of treatment. Postural drainage and the creosote chamber fail inasmuch as the drainage cannot be complete because of the turgescence of the mucous membrane above the lesion—the cause of the trouble. The most reasonable method of treatment is lobectomy, but the lesion must be confined to one lobe; moreover, it should be done early, at a time when the patient is still quite well. At this time one hesitates to recommend an operation which has a mortality-rate of upwards of 30 per cent., when there may be expectation of life without the operation of ten years or more. From phrenic avulsion we have seen little good result; previously we have tried it in a number of cases, but have failed to see any permanent benefit. In evaluating the results of phrenectomy it must always be remembered that bronchiectasis will improve spontaneously from time to time, and the reports of good results following this operation are found in cases which have only been watched for a short period after operation. Not only do we regard the operation as valueless, but, in the light of recent experience, as distinctly harmful, for, if one views these patients with the bronchoscope, one will see that the force of their cough is greatly reduced, and when one remembers that the one method the patient has of emptying the bronchus is by coughing, the fallacy of this operation is apparent.

Thoracoplasty may reduce the volume of cavities, but is seldom successful in completely closing them, there being no active repair changes going on as in a tuberculous cavity; the patient may be improved, but is still bronchiectatic, and liable to fatal complications. Artificial pneumothorax collapse obtained by this method is seldom, even in slight cases, sufficient to bring the walls of cavities in apposition, and we have not obtained complete cures by this method, even when we have replaced the air by gomenol.

Summary

In our small series of acute cases bronchoscopic drainage in addition to medical treatment seems to produce a definitely higher proportion of cures, compared with medical treatment alone.

In chronic abscess when medical treatment was of no avail bronchoscopic drainage has succeeded in producing a cure in nearly every case, without loss of life, whilst surgical procedures which we have had done in the past have produced 65 per cent. cures with 35 per cent. loss of life; in addition some of the cures have been left with persistent sinuses very hard to heal and often necessitating several plastic operations.

In bronchiectasis, abscess with bronchiectasis and bronchiectatic abscess, although producing no radical cures, bronchoscopic drainage is a palliative measure of very considerable value.

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VARIATIONS IN THE IODINE CONTENT OF THE BLOOD

IN HYPERTHYROIDISM AND NON-TOXIC GOITRE

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SINCE the original announcement by Gley and Bourcet[1] in 1900 of their discovery that iodine is a constant and normal constituent of blood, attempts have been made repeatedly to establish a connexion between diseases of the thyroid gland and variations in the blood iodine content. This problem has been surrounded with the greatest difficulties owing to complications in the analytical methods. The amount of iodine present in the blood under normal conditions is very small indeed, and hence investigators were hampered both by having to use complicated micro-methods and by being compelled to use relatively large quantities of blood.

In the first place, the normal variations in the iodine content of the blood have been expressed by various workers to lie between some 5–20 γ per 100 c.cm.* Kendall and Richardson,[2] in 1920, stated that the variations found by them ranged from 10 to 17 γ with an average of 13 γ per 100 c.cm., whilst in 1925 Veil and Sturm[3] pointed out that there was a seasonal variation with an average figure of 12·8 γ in the late summer and 8·3 γ in the winter. In 1926 a very important paper by von Fellenberg established firstly the method and secondly the normal figures.[4] Maurer and Diez[5] in 1926 found an average of 9·2 γ, with upper and lower limits of 15 γ and 4·2 γ respectively. Jansen and Robert[6] in 1927 reported an average of 12 γ per 100 c.cm., with a maximum of 16·2 γ and a minimum of 10 γ. It would appear therefore that the majority of workers agree to an average figure for total blood iodine in the normal person of about 8–13 γ per 100 c.cm.

Turning to the pathological side, it has been maintained by various workers for some considerable period that there is a relationship between the activity of the thyroid and blood iodine content. Thus, following thyroidectomy, Sturm and Buchholz[7] state that the blood iodine content of the dog falls. The amount of carefully controlled work, however, on this point was very small until the publications of Holst,[8] Lunde,[9] and their co-workers appeared. These workers wished to study the relationship between the iodine content of the blood, the basal metabolic rate, and the degree of toxicity of patients with hyperthyroidism. In the first place, they came to the conclusion that mere estimations of the total iodine content of the blood were of little value since this was greatly influenced by iodine and iodides which had been taken by mouth. They therefore devised a method of fractionating the iodine content of the blood into two parts, one soluble in alcohol and the other insoluble in alcohol. The alcohol insoluble fraction represents, according to their statements, the iodine-containing substance circulating in the blood, which is presumably responsible for the toxic symptoms. This, they assumed, was also secreted by the thyroid gland. In the normal person they found that the alcohol-insoluble fraction was constant at some 1–4 γ per 100 c.cm., and the alcohol-soluble fraction varied from 7–12 γ per 100 c.cm. If inorganic iodides or iodine were administered by mouth then there was an immediate rise in the alcohol-soluble fraction, whilst the alcohol-insoluble fraction remained unaffected.

A series of cases of hyperthyroidism was very carefully studied by these workers, and it was shown that at the outset, before any iodine treatment was given, the alcohol-insoluble iodine content of the blood was very much above normal, its amount corresponding roughly to the extent to which the basal metabolic rate was raised. If the patient was then treated with iodine by mouth, the basal metabolic rate fell, as was shown by Plummer,[10] and they demonstrated in the cases studied by them that the alcohol-insoluble iodine also fell, pari passu, with the basal metabolic rate. When the basal metabolic rate had fallen to normal, the alcohol-insoluble iodine *content was also within normal limits, and thyroid*ectomy was performed at this point. The basal metabolic rate thereafter remained at a low or normal level, and the alcohol-insoluble iodine content of the blood also remained within normal limits. It appeared from their results that there was a definite correlation between the basal metabolic rate and the alcohol-insoluble iodine, and, since the gradual disappearance of signs of intoxication and the reduction of the basal metabolic rate went hand in hand with the fall in this fraction of the blood iodine, they put forward as a definite conclusion that determination of this substance in the blood would give as reliable evidence of the toxicity of the case as the basal metabolic rate would, and that in effect this fraction represented the basal metabolic rate-raising substance secreted by the thyroid in such conditions. The importance of this suggestion is obvious to all interested in the problem of toxic goitre, and so naturally formed the starting point of this investigation. It was decided in the first place to repeat the work of Holst, Lunde, and their co-workers, with a view to extending it later by attempting to elucidate the chemical nature of this organic iodine compound which was insoluble in alcohol. The investigation described consists of (*a*) an inquiry into the methods used for the determination of iodine in the procedure adopted by Lunde, and (*b*) the application of this method to the study of cases undergoing treatment.

Determination of Iodine

The method used for the estimation of iodine in this investigation is that of von Fellenberg,[4] as modified by Lunde.[9] [11] Briefly, the method is as follows :—

10 c.cm. citrated blood are added to about 40 c.cm. iodine-free alcohol and thoroughly shaken. The finely divided coagulum is extracted in a Soxhlet's apparatus for four hours. This period of extraction is sufficient to remove all the alcohol-soluble iodine-containing substances, since experiments have proved that further extraction up to 100 hours gives no appreciable increase in the quantity of iodine extracted.

For the ignition to destroy organic matter the two portions are transferred to flat, stainless iron dishes. To the insoluble fraction is added 8–10 c.cm. 50 per cent. potassium hydroxide solution, and to the alcohol extract 1·5 c.cm. saturated aqueous potassium carbonate. The contents of the dishes are evaporated to dryness on a waterbath, and then heated gently at first, and finally to 400° C., till the odour of burning organic matter has almost disappeared. The mass is then dissolved in the smallest possible quantity of water, and hard lumps are crushed with a pestle. The solution is again evaporated and heated, and the whole operation is repeated until a white ash is obtained which gives a clear and only slightly coloured solution. After the final evaporation and ignition. water is added drop by drop, whilst grinding with an agate pestle until a thick paste is obtained, which is extracted first with 10 c.cm., and then with three portions of 3 c.cm. 95 per cent. alcohol. The extract is evaporated to dryness in a small gold-platinum dish with about 5 drops of saturated potassium carbonate solution. and the dish is cautiously heated over a free flame. care being taken that the bottom of the dish does not attain red heat. This ash is then extracted with three portions of 3 c.cm. alcohol in a similar manner to the first extraction.

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* 1·0 γ = 0·001 mg.

The final extract is evaporated to dryness, and the residue is dissolved in about 3 c.cm. water and carefully transferred to a small Erlenmeyer flask (25 c.cm.). One drop of 2 N sulphuric acid and about 0·25 c.cm. freshly prepared bromine water are added. and excess bromine is removed by boiling for one minute. After the addition of a minute crystal of potassium iodide the liberated iodine is titrated with a N/1000 solution of sodium thiosulphate. Experiments performed with pure potassium iodide added to pure potassium carbonate solution have shown that the extraction of iodide by alcohol is completely quantitative, provided that only sufficient water is present to form a paste. These experiments confirm the findings of Aitken.[11]

In check experiments on the complete estimation we have succeeded in recovering 85–90 per cent. of iodine added to the alcohol-insoluble fraction from 10 c.cm. blood in the form of organic iodide or thyroxin in amounts corresponding to 1 γ of iodine.

Reagents were purified by the methods described by Lunde and von Fellenberg,[12] and all estimations were carried out in duplicate.

Clinical Application

Having ascertained the limits of accuracy of the method and established in a satisfactory manner the normal values for men and women of the age of the goitre patients. a number of patients with toxic goitre undergoing treatment in the hospital were selected for observation. These patients were all treated as in-patients and the procedure was as follows: they were admitted to the surgical wards of the Middlesex Hospital. and the basal metabolic rate was determined at intervals throughout the course of the investigation by means of the Benedict-Roth apparatus. The standards of Aub and Dubois were employed. Prolonged experience in this laboratory with this method has shown that the experimental error is no more than 5 per cent. The patients were rested in bed without any treatment until the basal metabolic rate was constant. and specimens of blood were then collected and the iodine determinations performed. Iodine was then administered daily in a dose of 180 mg. per day in the form of Lugol's solution. and specimens of blood were collected during the course of the treatment. When the basal metabolic rate had fallen to normal, or had remained at a constant low level for two days, subtotal thyroidectomy was performed, the iodine was stopped. and whenever possible specimens of blood were collected after the operation. The patients after their discharge from hospital were seen at various periods for determinations of their basal metabolic rate. and the blood iodine distribution was also studied. The results are set forth in a series of tables.

TABLE I.—*Normal Persons*

Case.	Age.	Blood iodine. Alcohol-insoluble.	Blood iodine. Alcohol-soluble.	Total.
A	Under 40	5·4	7·3	12·7
B		5·3	10·7	16·0
C		5·7	11·9	17·6
D		3·6	4·9	8·5 γ per 100 c.cm.
E		2·4	5·4	7·8
F		2·4	6·1	8·5
G		3·2	7·4	10·6
H		3·9		
I		4·0		
J		5·8		
K		3·4		
L	Over 40	3·6 γ per 100 c.cm.		
M		3·6		
N		4·6		
O		3·5		
P		3·3		

Average: 3·95 γ per 100 c.cm.

In Table I. will be seen the findings in 16 normal people. with five over the age of 40. The average value for the alcohol-insoluble portion of the blood iodine is 3·95 γ per 100 c.cm.. and may be taken as the normal figure for the age of the various patients in our series. The highest reading obtained was 5·7. and the lowest 2·4. These figures do not differ markedly from those already published by previous investigators.

TABLE II

Case.	Days of observation.	Remarks.	B.M.R.	Alcohol-insoluble blood iodine in γ per 100 c.cm.
A. A. ..	1	Before iodine.	−60	12
	16	180 mg. I. per day.	−18	10
J. D. ..	1	Before iodine.	+60	71
	14	180 mg. I. per day.	+70	26
	18	„ „ „	−50	15
D. W. ..	1	Before iodine.	+10	6
	26	180 mg. I. per day.	−30	10
E. Cu. ..	1	Before iodine.	−80	38
	16	180 mg. I. per day.	−30	15
R. E. ..	1	Before iodine.	+40	5
	12	180 mg. I. per day.	−30	13
W. McK.	1	Before iodine.	+37	43
	10	180 mg. I. per day.	−10	16
E. Gr. ..	1	Before iodine.	+44	45
	6	180 mg. I. per day.*	+52	17
M. La. ..	1	Before iodine.	−34	32
	17	180 mg. I. per day.	−24	12
H. M. ..	1	Before iodine.	+66	12
	126	180 mg. I. per day.	−24	4

* Operation on 16th day when B.M.R. had come down.

Table II. shows the results of simultaneous determinations of basal metabolic rate and alcohol-insoluble iodine content of the blood in relation to treatment of patients with iodine. After a preliminary period of rest, the basal metabolic rate was determined and the blood analysed. Immediately following this, 180 mg. of iodine per day were administered in the form of Lugol's solution, and the basal metabolic rate was determined at intervals. When it had reached its lowest point the patient was bled, and the results are reported in the Table. A very careful scrutiny of the various figures reveals in the first place that in almost every case the alcohol-insoluble fraction of the blood iodine is raised. and that after treatment with iodine it is reduced in quantity. This bears out the findings of Holst, Lunde. and their co-workers, in so far as they state that this fraction is always increased in toxic goitre and falls after the administration of iodine. It can be seen that there is no relationship between the fall in alcohol-insoluble iodine content of the blood and the basal metabolic rate. Reference to details in the Table demonstrate very clearly that the two do not go hand in hand. It would appear, therefore, that this series of observations constitutes a very serious blow to the theory put forward by Holst and his colleagues that the alcohol-insoluble fraction of the blood iodine is definitely a measure of the toxicity of a case of exophthalmic goitre. It was decided to conduct a series of experiments to elucidate, if possible, the significance of this fraction of the blood iodine content.

It would be familiar to all who are experienced in the treatment of these cases that immediately after operation there is a rise in temperature and basal metabolic rate and, in fact, an exacerbation of the symptoms of the case. This has usually been attributed to a squeezing out of the toxic secretion which produces the symptoms during the process of removal of the gland. A series of patients was therefore taken and blood was collected immediately before operation and again immediately after operation. The alcohol-insoluble fraction of the two specimens was estimated and the results will be seen in Table III. The results indicate that the exacerbation of the symptoms following operation cannot be attributed to an increase in the alcohol-insoluble fraction of the blood iodine.

TABLE III

Case.	Alcohol-insoluble blood iodine.	
	Immediately before thyroidectomy.	Immediately after thyroidectomy.
	γ per 100 c.cm.	
R. E.	13	14
W. McK. ..	16	17
E. Cu.	15	26
H. M.	4	5
J. D.	15	16

In order to ascertain whether there was any fixed relationship between the basal metabolic rate and the alcohol-insoluble fraction of the blood iodine at any given moment, a series of simultaneous determinations of these two figures was made, and these are set out in Table IV. Again it is only possible to generalise, and to state that in the main a high basal metabolic rate is associated with a high alcohol-insoluble blood iodine content, but there is no quantitative relationship between the two; nor, as a matter of fact, does the reverse hold true, and the Table demonstrates that it is possible to have a low iodine fraction associated with a very high basal metabolic rate. It must be admitted that this series of results again casts grave doubt upon the validity of Holst's hypot In order to provide control observations, a seri patients with non-toxic goitre were examine simultaneous determinations of basal metabolic and blood iodine. These patients, of course, wer treated with iodine. It can be seen that in a nu of them, although the basal metabolic rate was no or subnormal, the alcohol-insoluble blood i content was considerably raised.

TABLE IV.—*Toxic Goitres*

Case.	B.M.R. before iodine therapy.	Alcohol-insoluble blood iodine. γ per 100 c.cm.	Case.	B.M.R. before iodine therapy.	Alcohol-insoluble blood iodine. γ per 100 c.cm.
M. Cl. ..	+30	15	A. P. ..	+50	19
A. A. ..	+60	12	T. R. ..	+20	16
D. F. ..	+34	11	E. Cr. ..	+30	21
E. Ch...	+60	12	F. E. ..	+20	13
H. M...	+60	6	J. H. ..	+65	7
E. J. ..	+40	8	L. P. ..	+60	14
D. Ha.	+52	8	R. S. ..	+90	80
G. B. ..	+49	4	M. B. ..	+20	42
N. S. ..	+20	9	D. D. ..	+10	39
M. La.	+34	32	D. W. ..	+10	6
W. McK.	+38	43	E. Gu. ..	+30	8
E. Cu...	+80	38	M. Le...	+51	8
J. D. ..	+64	26	F. S. ..	+40	9
E. Gr...	+48	45	M. Ca...	+28	7·5
A. C. ..	+66	20			

TABLE V.—*Non-toxic Goitres*

Case.	B.M.R.	Alcohol-insoluble blood iodine in γ per 100 c.cm.
L. R. ..	−12	15
I. C.	− 3	7
B. P... ..	Normal.	18
M. T. ..	− 1	8
J. S... ..	+ 2	19
A. R. ..	−40	12

TABLE VI

Case.	Days of observation.	Remarks.	B.M.R.
E. Cu...	1	Before iodine therapy.	+80
	16	After 180 mg. I. per day.	+30
	35	After thyroidectomy 16th day.	−12
W. McK.	1	Before iodine therapy.	+37
	10	After 180 mg. I. per day.	+10
	18	After thyroidectomy 10th day.	+ 2
E. Gr...	1	Before iodine therapy.	+50
	6	After 180 mg. I. per day.	+58
	33	After thyroidectomy 12th day.	+12
	170	” ” ” ”	−50
M. La.	1	Before iodine therapy.	+34
	17	After 180 mg. I. per day.	+24
	23	After thyroidectomy 19th day.	+16
	153	” ” ” ”	−10
H. M...	1	Before iodine therapy.	+66
	126	After 180 mg. I. per day.	+24
	198	After thyroidectomy 126th day.	− 8

In Table VI. are set out the results obtaine patients following thyroidectomy. It can be seen removal of the thyroid seems to produce at first in the alcohol-insoluble blood iodine content.

TABLE VII

Case.	Diagnosis.	B.M.R.	Blood iodine.	
			Alcohol-soluble.	Alcoh insolu
			γ per 100 c.cm.	
D. Hu.	Non-surgical hypothyroidism.	−20	11	11
H. A.	Exophthalmos.	+ 3	32	20
	1 month later.	+ 5	16	8
J. E.	Exophthalmos.	− 3	14	6

Finally, in Table VII. are recorded the re obtained on a series of patients with various conditi The first is a marked non-surgical hypothyroidism, the other two were patients with an unexpla exophthalmos.

General Conclusions

The results set forth in this paper indicate, fir that Lunde's claim for the separation of the b iodine into two fractions by means of alcohol ext tion is justified and that these two fractions vary different manner. They also confirm the fact that insoluble fraction is increased in quantity in patients with toxic goitre, and *that this amount* be reduced by oral treatment with iodine. The ca simultaneous determination of basal metabolic has shown, however, that this fall is not necessa *associated with a reduction in the toxicity and* basal metabolic rate. The number of cases exami by Holst and Lunde and their co-workers is very much smaller than the series studied by us, and it is along this line that the discrepancy is to be explained. It would be quite possible to find a series of patients in which the reduction in the basal metabolic rate corresponded to the reduction in the alcohol-insoluble blood iodine content. It is to be noticed that in the series published by Holst in his monograph, all the patients responded well to the iodine treatment. In refractory cases the alcohol-insoluble blood iodine content falls, yet the basal metabolic rate and toxicity will still remain high. The conclusion, therefore, is forced upon us that the alcohol-insoluble fraction does not represent a measure of the toxic secretion by the thyroid. The observations on cases of simple and non-toxic goitre amply confirm this view, and it must be admitted that the solution to the nature of the pathological secretion of the thyroid gland very definitely does not lie along the line of study of the total alcohol-insoluble fraction of the blood iodine content.

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STENOSIS OF THE COLON IN INFANCY

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FOUR CASES

CASE 1.—A. B. was a full-term child, apparently normal at birth, but it was noticed that a motion was only passed every third day, and there were occasional attacks of vomiting. As he was obviously failing he was admitted to hospital when a month old. In hospital the vomiting gradually ceased, and with the aid of daily rectal lavage two or three motions were passed daily, but in spite of treatment death took place 14 days after admission.

Permission for a *post-mortem examination* of the abdomen only was obtained, and the following conditions were found:—

There was no free fluid in the peritoneum, but the intestines were bound down with adhesions. The small intestine, stomach, appendix, and cæcum were normal, except for adhesions. The ascending colon was somewhat dilated, but its coat was not hypertrophied. It contained a fair quantity of soft, yellow fæces. The hepatic flexure did not present any stenosis. The transverse colon was very much dilated, and was filled with a huge quantity of yellow fæces. At the splenic flexure there was a very definite narrowing of the gut, and here the muscle tissue was increased, apparently forming an obstruction to the flow of bowel contents. The descending colon and sigmoid were also distended, but to a much lesser degree, and there were no contents. There was no thickening at the junction of the sigmoid colon and the rectum. The dilatation which was present below the obstruction was probably due to atony, and comparable to the ballooning sometimes seen below a malignant growth.

Microscopical sections were made of the bowel wall above, below, and at the point of stricture, and an increase of muscle tissue was found in the constricted portion as compared with the other two sections. Also there was a subacute but active inflammatory process in the submucosa, most marked in the stenosed section, but present also in the others.

CASE 2.—Until he was 8 months old C. D. was perfectly well and gained weight rapidly. Then the bowels became somewhat constipated, but otherwise he seemed healthy, and it was decided to begin weaning. One artificial feed was accordingly given at 2 P.M. each day, and this was vomited, but the remaining (breast) feeds were taken well and retained. After seven days an attempt was made to stop all breast feeds, but the child refused them and would only take boiled water. The stools became loose, green, and copious, and he was admitted to hospital in a collapsed condition. After admission he became constipated, and an enema given on the first day contained a few flakes of fæcal material. Enemata given on the following days were without result, and no motion was passed. Vomiting ceased, but acetone and diacetic acid were present in large amounts in the urine. On the third day after admission he died at the age of 9 months.

The *post-mortem examination* showed a fat baby with distended abdomen. Apart from the abdominal findings no abnormalities were detected.

The stomach was normal. The small intestine was filled with deep green, very offensive fæcal matter. The large intestine was filled with air and was much distended. A narrowed portion, about 2 inches in length, was found in the descending colon, but air and fluid could be squeezed through it. (Fig. 1.) There were no peritoneal bands or adhesions. A section taken from the point of stenosis showed, in addition to an increase in the circular muscle coat, a great increase in fully formed fibrous tissue in the submucosa as compared with a section from the apparently healthy colon above the stenosis.

CASE 3.—E. F. was also a full-term child, and labour had been normal. For three weeks he was breast-fed, and then the supply of milk failed and Allenbury's food, milk and water mixtures, and Sunshine Glaxo were substituted, one after another. He was always delicate, and feeding was difficult, but for six weeks before admission to hospital vomiting had been frequent and on one occasion he had vomited blood. He had had diarrhœa for weeks, but for two days before admission he had been constipated and the abdomen had been distended. On admission he was a very ill, dehydrated baby. Coils of gut were visible, but peristalsis was not seen. A mass was felt in the right iliac fossa and above the pubes. Although a diagnosis of intestinal obstruction was made, operation was never considered feasible, and he died eight days later, at the age of 8 months.

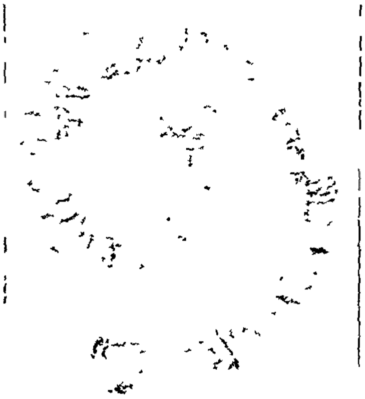
The *post-mortem examination* showed a thin child with markedly distended abdomen. The large intestine showed ballooning above and below a stenosed portion situated at the junction of the descending and the sigmoid colon. (Fig. 2.) There were fibrous adhesions binding the first part of the ascending and last part of the descending colon to the parietes. There was no naked-eye evidence of ulceration or inflammation along the intestinal tract. Sections cut from the apparently normal bowel and from the wall at the stenosed part showed considerable increase in the circular muscle tissue in the latter section. There was some subperitoneal fibrosis in both sections.

CASE 4.—G. H., also a male, was a full-time baby weighing 8 lb. at birth. For 11 weeks he was breast-fed, but this diet was then changed to half-cream Cow and Gate food. There was a history of constipation since birth, and great effort was needed on defæcation. The abdomen was often distended, but there was no vomiting. On admission to hospital the abdomen was much distended and was hard on palpation, but there was no rigidity. Simple and olive oil enemata on the day of admission gave very little result. Further olive oil enemata given on the first and second days after admission produced better results, although the abdomen still remained distended. On the third day coils of gut could be seen through the abdominal wall, but peristalsis was not noticed. The child began to vomit, and vomiting continued until his death two days later, at the age of 14 weeks.

The *post-mortem examination* showed an emaciated infant with a very much distended abdomen. Apart from the lesions in the abdomen no abnormalities were found. The stomach and duodenum were normal. There was increasing dilatation of the ileum and jejunum until the ileocæcal valve was reached, and here there was an abrupt narrowing. (Fig. 3.) The first inch of the appendix was distended, and there was considerable distension of the cæcum and the ascending, transverse, and descending colon. This distension was most marked in the cæcal region and became progressively less. Large masses of hard fæces were found in the descending colon and rectum. At the junction of the descending and the sigmoid colon there was well-marked stenosis which, however, was not complete, as material could be forced through it.

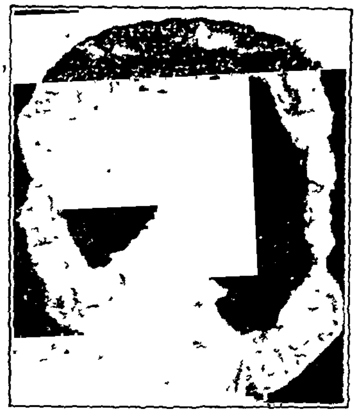
Sections were cut from the stenosed portion and from the least distended portion of the bowel above. The section of the former showed considerable increase in submucous fibrous tissue and a certain amount of increase in the circular muscle tissue. The section taken of the bowel above the stenosis did not show any abnormality apart from the fact that the mucosa had disappeared, probably owing to post-mortem change.

FIG. 1 (Case 2)



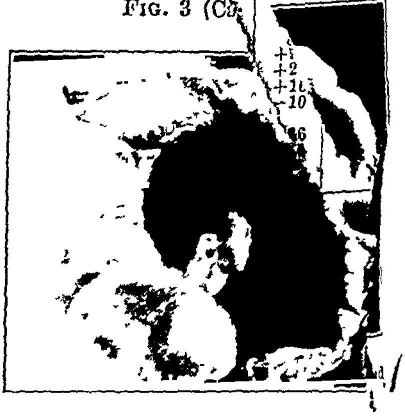
of the descending colon with ballooning below.

FIG. 2 (Case 3)



Stenosis of the colon at the junction of descending and sigmoid colon.

FIG. 3 (Case 4)



Stenosis at the junction of descending and sigmoid colon and extreme dilatation of the bowel above.

ÆTIOLOGICAL FACTORS

The origin of congenital stenosis has not yet been fully explained, but the following factors are suggested:—

(a) Embryonic disturbances of develo
diverticulum may cause fixation o
resulting stenosis. In other cases
anomalies with insufficient nour
intestine, or an ab ch
obstruct the gut.
ment atresias occ

due to cell proliferation in the already fully developed intestine; the gut at various points in consequence becomes solid. If for some unknown reason the embryonic state persists, an atresia occurs. If the embryonic state only persists in part a stenosis is the result.

(b) Mechanical causes.—An enlarged liver, a hypertrophied head of the pancreas, and congenital abdominal tumours or cysts may compress the bowel externally and give rise to symptoms of stenosis. Volvulus or intussusception in utero may cause obstruction, but the rôle of these factors in causing stenosis has been much disputed.

(c) Fœtal inflammations.—It seems quite possible that [illegible] peritonitis may cause stenosis in the intestinal wall, but [illegible] usually evidence of any such fœtal peritonitis is lacking, and when it is present it is probably rather a result [illegible] a cause of the atresia. Fœtal enteritis, which has been [illegible] postulated from the finding of overfilled vessels, swelling of the intestinal lymph follicles, and positive bacteriological results, should be regarded as a secondary process.

(d) Sex.—Since all the above cases occurred in male children, statistics have been collected as to the occurrence of other stenoses in the alimentary tract. Only Sheldon[1] reports two cases of colonic stenosis, and he unfortunately does not record the sex. Congenital stenosis of the pylorus occurs four times as frequently in males as in females, according to Feer. Still[2] had 35 males amongst 42 cases of pyloric stenosis. In my own post-mortem records there were ten males and two females. Smellie[4] reported three cases of duodenal stenosis, all of them males, and I have collected three similar cases, two of whom were male; the sex of the other was not recorded. Records of the sex-incidence in cases of stenosis of the jejunum, ileum, and rectum were not found.

TYPES OF STENOSIS

Atresias may be of varying degrees of severity
complete absence of the greater part
of the cæcum.

mery[1] described a case of congenital
cæcum and ascending colon. The patient
42 years of age, who consulted him for
sigmoidoscopy revealed the presence
colon, and the abdomen
ostomy might be made
was found: the lower part

f the ileum was dilated, and passed at once into the ansverse colon; there was a rudimentary appendix in he angle where the ileum joined the colon.

Elliot Smith[6] described a similar condition in a woman f 25 years of age. In this case the ileum passed directly nto the ascending colon, and there was no trace of any æcum or ileocæcal valve. There was a rudimentary ppendix, and the colon had a very long mesentery.

Gellert[7] reported the case of a boy aged 5 days. There vas absolute constipation from birth but no vomiting, nd feeds were taken well. He died on the sixth day of fe, and a post-mortem examination showed that the whole f the large intestine was represented by a pale contracted ibrous band, the lumen of which would only admit a noderate-sized probe. A plug of mucus completely occluded he lumen at the splenic flexure.

Walker[8] reported a congenital defect of the lower bowel ccurring in three successive children of one family. In he first two infants operation and post-mortem examination howed that the large intestine was completely absent. n the third case the child seemed normal at birth, but ithin 24 hours there was abdominal distension, pain, and emperature. Examination per rectum revealed a blind nd less than 5 cm. from the anus. Post-mortem examination was not permitted.

Schukowsky[9] collected but one case of colonic stenosis mongst 20,000 new-born children. In this child the lower uarter of the ileum, the whole colon, and the rectum were presented by a band containing hardly any lumen.

Fyfe[10] records a case in a boy of 2 days old in which e large intestine terminated in a balloon-shaped cul de sac the splenic flexure with little trace of the bowel between cept at the anus. The symptoms were absolute conipation and vomiting from birth. The child died when 3 days old.

Sheldon[1] states that only two cases of partial colonic enosis were found in 6000 post-mortem records, and is appears to be the only record of the less complete bnormalities which are described in this paper.

Although there was some increase in circular muscle tissue at each of the stenosed points in my cases, yet in two only was this a very marked feature. In one of the other two cases there were definite subacute inflammatory changes in the submucous coat; in the other there was evidence of an old nflammatory condition in the large deposition of fibrous tissue, also in the submucosa. There are thus two distinct types, one of purely muscular, one of inflammatory origin.

DIFFERENTIAL DIAGNOSIS

(*a*) *From Hirschsprung's disease.*—The symptoms in this disease and in colonic stenosis are almost identical, though pain does not seem to be a marked feature in the latter disease. On post-mortem examination there are several points of dissimilarity: in Hirschsprung's disease there is no apparent bstruction, and the muscle coat of the dilated portion (longitudinal and circular fibres) is much hypertrophied.

(*b*) *From congenital pyloric stenosis.*—In this disease vomiting is a particularly prominent symptom. It s forcible, sudden, and often copious, and its onset s usually in the second to the fourth week of life. Visible peristalsis can almost always be detected if sufficient examinations are made after a feed. Constipation and wasting are present as in colonic stenosis.

In conclusion, I should like to tender my thanks to Dr. C. Chisholm, Mr. D. M. Sutherland, and Dr. J. F. Ward for their kindness in allowing me the use of their clinical notes.

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THE MENTAL EFFECT OF THE COMPLETE MASTOID OPERATION IN CHILDREN

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At a meeting of the Otological Society of Great Britain in 1907, Mr. Waggett spoke of the effect of the complete mastoid operation on mentality in the adult. His remarks are to be found in the Society's *Transactions* (1907, viii., 36) and the passage is worth quotation:—

> "Mr. E. B. Waggett said he had gained an impression that people who had had complete mastoid operations became extremely miserable—he scarcely liked to say neurasthenic. He had now three young women under his care upon whom complete mastoid operations had been performed, and, although as aural cases they were very satisfactory, they were constantly worrying about their general condition. The most miserable man he had ever seen lived nine years after removal of part of his cochlea and a cerebellar abscess. It was well known that the removal of organs had a depressing effect on the mind and on the whole economy, and it would be useful if evidence were collected on the subject whether the complete mastoid operation, with removal of the musculature, the ossicles, &c., had a more profound effect on the general condition than a minor operation."

The opinion generally expressed at this debate was that such result depended on the family history of the patient, and one speaker suggested that the operation might sometimes even be a means of preventing insanity. It was considered by the otologists present that cases of profound depression following the radical operation were too few to warrant an endorsement of Mr. Waggett's statement, a conclusion with which I fully agree. No mention was made of the concussive effects of the operation, nor was the pain of the dressings, often long continued, alluded to. The question of operation in children was not introduced.

Looking through the notes of a considerable number of adults cases of my own, both private and in hospital, I find that the usual result of the operation was improvement in mental as well as physical condition. It may be that some of the cases cited at the debate in 1907 were affected by the concussion resulting from the use of the mallet and chisel for an hour or more, as I find that some of my earlier cases suffered from that method of operation, a method which has, during the past 25 years, been almost entirely superseded by the cutting gouge.

AN INQUIRY

There is, however, a very considerable mental disturbance in many children following the complete radical operation, especially in those who have been operated upon more than once. My attention was drawn to this fact some time ago by teachers in the L.C.C. deaf-schools, these teachers speaking to me individually and independently. I was told that the "mastoid" children were "mentally inferior," dull, slow in the uptake, irritable of temper—all rather vague statements, but enough to suggest that a mental effect of a serious kind was present that might be worth investigation. I therefore addressed a circular letter to nine head teachers of deaf-schools asking for information on the subject, and to these ladies and gentlemen I am indebted for some interesting replies from which certain deductions may be made.

It must be remembered that the children in our deaf-schools whose defect follows middle-ear suppuration due either to an infectious fever, of which scarlet fever, measles, and diphtheria are the most serious, or to primary ear disease are usually specimens of the worst ravages of this condition. They are mostly children from poor environment, of bad stock and inferior nutrition, children who have run through the gamut of neglect and of treatment, and in whom the consequent impairment of hearing is considerable. With children whose otorrhœa has been early taken in hand and treated efficiently—and in such cases the radical operation is not needed, simple draining of the mastoid antrum usually being the most that is necessary—I have nothing to do; the great majority of them return to the hearing-schools and do not come into my ken. In this paper, therefore, I speak of the worst cases only; what ratio they bear to the others I cannot say.

The opinions expressed in the nine letters referred to may be summarised as follows:—

1. Of four boys and three girls now in the school, the response is average, but the general intelligence and memory are variable and industry and mental balance are well below that of the other children.

2. Mentality of these children is poor and takes from four to five years to recover. Very quickly exhausted at anything requiring exertion.

3. They suffer from shock for some time after. One boy, for 18 months after double radical operations, took no interest in anything and did practically no work; at the end of that time he suddenly picked up, became bright and cheerful, and commenced to work well. Other cases that returned to school straight from hospital showed similar reaction. Those operated upon some time before entering this (a secondary) school had already recovered.

4. Of 18 cases, all of good intelligence and all operated upon at an early age, the mental processes were slow in ten, three were nervous, one showed mental irritability, six lacked concentration, and one had a very poor memory. One boy remembered a period of shock after operation when thinking was difficult.

5. All mastoid children took a considerable time to recover, one boy not recovering completely after three years. All showed "nervous debility."

6. The chief characteristics of the mastoid children are: increased irritability; weak memory; want of balance in behaviour; lack of concentration. They are "worried by anything out of ordinary routine and any pressure or correction usually results in an emotional outbreak. The [illegible] moral sense appears to be affected [illegible] which does not develop, but retains [illegible] time of reaction appears to be affec[illegible] very few mastoid cases are normal a[illegible]

7. The children are dull and heavy for some time after operation.

8. "Speaking generally," all show evidence of shock to the nervous system. Whereas some overcome this in a [illegible] others carry traces of it throughout

reference to the loss of function, I would point out that in the amount of residual hearing which the operating otologist considers to be ample for education in a hearing school he is often far from being in accord with the school medical officer. This is not infrequently shown in certificates produced intimating that the child is not sufficiently deaf for transference to a special school. Not only may the operating surgeon be deceived by the child's possible power of lip-reading, but he appears to have little conception of the disturbing effect of the ever-present noise inseparable from a class of 30 or 40 children upon a partially deaf child.

The mental effect, apart from the toxæmia, of prolonged otorrhœa is probably due to long-continued pain and fear of painful dressings. The condition is one of nerve exhaustion from prolonged suffering and mental strain, leading to irritability, emotional outbursts, lack of concentration, bad memory, and want of balance in behaviour. The effect is always more marked in children who have been compelled to undergo more than one operation.

The obvious remedy lies in efficient prevention of aural suppuration and earlier treatment when it is present, so that the complete operation may be avoided. Into these points I need not enter, they are self-evident. I would, however, point out that the number of cases with discharging ears seen by me in the course of my inspections at the L.C.C., has diminished during the past 21 years by nearly 50 per cent., a striking evidence of improved conditions.

ON THE
PATHOGENESIS OF AVITAMINOSIS A

VITAMIN A AS THE ANTI-KERATINISING FACTOR

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nd presumably of value in combating all types of fections—i.e., that vitamin A is the anti-infective itamin in the wide sense in which vitamin C is the ntiscorbutic vitamin, vitamin D the antirachitic, or itamin B the anti-beriberi. Commercial vitamin-A reparations are advocated "for the treatment of epticæmias and acute infections" and claimed to 'increase the general immunity." The evidence ollected in the present paper is in support of the view hat the infections which occur in vitamin-A deficiency re of a quite special type, localised in origin, and ssociated with the keratinisation of mucous membrane, which is regarded as characteristic of the eficiency; and of the corollary that the anti-infective powers of the vitamin are similarly limited in scope.

Xerosis and cornification, or keratinisation, of epithelial tissues in vitamin-A deficiency has been described by Mori,[3] Wilson and DuBois,[4] and Wolbach and Howe.[5] But whereas Wolbach and Howe regard the epithelial keratinisation as the primary lesion, Yudkin and Lambert[6] conclude that the keratinisation is secondary to the inflammatory process and infection, and Wason[7] similarly supposes the xerotic changes in the cornea to be secondary to and not the cause of the infection. Goldblatt and Benischeck[8] believe that infection might be either coincident with or subsequent to the epithelial change, while Tyson and Smith[9] conclude that infection may occur in the absence of keratinisation. Further study of this aspect of the problem therefore seemed desirable.

It has been claimed that rats, a species it will be recalled normally highly resistant to tuberculosis, become susceptible when fed on a diet deficient in fat-soluble vitamins (attributed alternatively to vitamin A[10] or D[11]), or that they become sensitive to tuberculin shock under the same circumstances.[12] These conclusions would appear to support the theory that vitamin A has a real action in increasing immunity to pathogenic organisms, in addition to its function in maintaining the health of the mucous membrane. It was decided, therefore, to see whether confirmation could be obtained for this suggestion—with negative results, as will appear below.

Evidence from Past Work

If vitamin A possesses any generalised anti-infective action it is reasonable to seek for some change in immunological reactions in vitamin-deficient animals. All attempts in the past to show such a correlation have, however, yielded substantially negative results (examination having been made of: agglutinins, complement, amboceptor, precipitins, bacteriolysins, hæmolysins, and immunising power of vaccination). A second line of approach is to determine whether inoculation with suitable micro-organisms or toxins is more lethal to an animal on a diet low in vitamin A than to an animal on a normal diet. Several workers claim to have obtained indications of a positive effect of this kind. A serious difficulty of interpretation arises here however. It is obvious that an animal suffering from the double disability of toxæmia and vitamin deficiency is likely to fare worse than one suffering from either alone. That is, the effect may be merely additive, and indicate no genuine direct action of the vitamin upon resistance. In my opinion, the effects recorded in the literature have rarely, if ever, been sufficiently striking to dispose of this criticism. On the other hand, there is some evidence that when micro-organisms are fed per os there is a tendency to greater absorption, and hence more severe ill-effects, in vitamin-A deficient as compared with normal animals (see below); which accords with the theory that in vitamin-A deficiency the integrity of the mucous membrane breaks down and ceases to function as an efficient barrier.[13] This consideration suffices to account for the many recent experimental findings which would otherwise appear to indicate a general anti-infective action for the vitamin, and have, in fact, been so interpreted. Against this trend in recent conclusions we may recall that, as long ago as 1924, Cramer and Kingsbury[14] found that vitamin-A deficient rats were no more susceptible than normal rats when the micro-organisms were injected subcutaneously; while Topley, Greenwood, and Wilson[15] have reported that large amounts of vitamin A added to a normal diet fail to reduce the severity of epidemic infections in mice.

Clinically vitamin-A therapy has yielded negative results in trials as a prophylactic against respiratory infections[16] and common cold[17] in infants, or the incidence of common infections generally[18]; it had a doubtful value in treatment of pneumonia[19] and failed to increase streptococcal immunity in pregnant women as judged by the Dick test.[20] In puerperal sepsis the occurrence of infection at the mucous membrane may provide a rational basis for vitamin-A prophylaxis, but, as pointed out by Mellanby, the number of cases so far treated does not yet permit of any final conclusions as to its value, having regard to the great variability of prognosis of individual cases.[21] The same difficulties as to natural variations in virulence and mortality, and the relatively small number of cases treated, make it even more difficult to assess the results of vitamin-A therapy in puerperal septicæmia.

Development of Lesions of Avitaminosis A in Rats

(*With* Dr. J. R. M. INNES)

Our object in this side of the investigation was to observe the slowly developing lesions of a- or hypovitaminosis A, with the hope of throwing light on their earliest manifestation, and order of appearance, in particular, if possible, to determine whether the structural changes in epithelia appeared to precede the infections.

Large groups of rats (26 animals were used in the principal experiment) were put on a vitamin-A free diet, consisting of sugar, 60 parts; purified casein (Glaxo brand), 20 parts; hardened cotton-seed oil, 15 parts; marmite, 10 parts; salt mixture, 5 parts; with a daily supplement of Radiostol (vitamin D). In order to permit of a slow development of symptoms. a minimal provision of vitamin A (as red palm oil) was given once the animal had begun to lose weight, sufficient being allowed to prevent too early death or rapid loss in weight, but insufficient to enable good growth to be resumed. Representative animals were killed every few days, from 17 days after the beginning of the experiment, up to 90 days. After post-mortem examination the following tissues were prepared for histological examination by the usual routine methods: eye, tongue, submaxillary and sublingual glands, pharynx, œsophagus, trachea, lungs, stomach, intestines, liver, spleen, kidney, bladder, testes, and seminal vesicles (or uterus).

Perhaps the most important general observation was that in all instances where infection had occurred keratinisation of epithelium could without exception be detected, including generally in sites not far removed from the infection. It is important to note that the infections are of a highly distinctive character, apparently always originating in the neighbourhood of an epithelium. Thus small abscesses seen in the medulla of the kidney in the later stages appeared to have spread from the pelvis; infectious lesions in the lungs from the bronchi; and those in the tongue, from the surface of the mucous membrane. The probability that the infections are secondary to the structural changes in the epithelium which follow on vitamin-A deficiency seems obvious. But the hope that one might be able to demonstrate, in the group of animals taken as a whole, two definite stages, first keratinisation without infection, leading later to a secondary infection, was in general not realised.

It is true that in certain sites, notably in the sublingual (and submaxillary) glands, which are the seat of the most constant and characteristic lesions, the early condition is slight keratinisation (in the ducts) with little or no infection, and the later stages keratinisation accompanied by increasingly severe infection. Thus in one series of animals half way through a slowly developing vitamin-A deficiency, 5 animals in serial order showed slight keratinisation without infection, and the next 9 in order—the avitaminosis now reaching more advanced stages—showed definite infection. In many sites, however, no clear-cut division into two stages, keratinisation without infection and keratinisation giving rise to infection, could be demonstrated.

In general, keratinisation and infection both increased gradually and concurrently in severity. The failure to find two separate stages in the development of the avitaminosis, throughout the body as a whole and in the whole group of animals, may be attributed firstly to the irregular, almost haphazard, order in which the epithelia become keratinised in the different animals in the group, and second, to the fact that infection may sometimes supervene almost simultaneously with the first detectable keratinisation.

When above we are using for convenience the term "keratinisation," we have of course in mind not one single factor but a series of structural abnormalities seen in the epithelia, comprising xerosis, keratinisation, desquamation. Secreting epithelium loses its normal character and becomes converted into a stratified, keratinised, desquamating structure, or in the cases of tissue like the epithelium of the kidney pelvis, or tongue, a hyperplasia is concerned in bringing about an analogous condition. It is easy to understand how these changes would conduce to local infections, and account for the observed picture. The xerosed membrane being deprived of its normal secretion, micro-organisms are not retarded from settling on its surface; apart from the more physical, or flushing, action of the secretion, its natural antiseptic properties, ascribed to lysozyme, must also be borne in mind. Secondly, the accumulation of a profuse debris of desquamated cells along the surface of a membrane will tend to set up irritation and cause severe obstruction, particularly in narrowly enclosed areas. Good evidence of ducts becoming in fact choked in this way and so rendered liable to infection is found in the experimental pictures of the ducts of the tongue, of the sublingual glands, and of the bronchi; these are commonly seen to be filled with desquamated epithelial cells, distended and infected. The pelvis of the kidney among other sites showed a similar condition.

The fact that vitamin A given to an animal not too far advanced in the avitaminosis will cure the diseased epithelia, and at the same time restore the animal to normal health, is further evidence for regarding the epithelium as the essential point in the pathogenesis of the infection. The local infection is, clearly enough, due to fortuitous micro-organisms which would normally prove harmless. If the condition is allowed to develop far enough, a general septicæmia may ultimately supervene. This can be attributed, beyond much doubt, to absorption of such micro-organisms through the walls of the perverted membrane which is no longer able to serve as an efficient barrier. Blood cultures confirm this conclusion, and there is little in common with acute clinical infections by specific pathogenic organisms to suggest that any benefit is likely to accrue from their treatment by vitamin A.

Influence of Vitamin-A Deficiency on Tubercle Infection in Rats

(*With* Dr. A. S. GRIFFITH)

Two experiments were carried out, the first of a more general character, to test the suggestion that in vitamin-A deficiency rats lose their normally high resistance to tuberculous infection, and the second to examine more particularly the effects of the increased absorption of the micro-organism from the alimentary tract which, on the grounds of the theory adopted in this paper, it was anticipated might be seen in vitamin-A deficient animals.

Expt. 1.—A large group of rats was put on a vitamin-A deficient diet consisting of casein (Glaxo brand), 20 per cent.; rice starch, 60 per cent.; dried yeast, 15 per cent.; salt mixture, 5 per cent.; radiostol 1 drop per rat per day; and after depletion, 6 animals which showed typical severe xerophthalmia were selected for test. These were then instilled in both eyes (one eye only in the case of an animal which had one eye completely closed), and in addition fed by pipette with an emulsion of a culture of bovine tubercle bacilli. Three normal control rats, which had been on a similar diet, but containing vitamin A in the form of cod-liver oil, were treated identically at the same time. The vitamin-deficient group were kept in a state of hypovitaminosis A, being given occasionally minimal allowances of vitamin A, sufficient to protect them from early death, but not sufficient to promote good growth. (The amount so needed was determined from controls in a third group, uninfected, but vitamin A deficient.) The infected vitamin-A deficient animals died after periods ranging from 20 to 93 days, and the controls were killed on the 47th and 97th days. Results were assessed on the basis of the following: macroscopic observation on autopsy, microscopical examination of lung, and cultures derived from the submaxillary and mesenteric glands. A similar picture was found in both the infected groups, vitamin A deficient and normal, and resembled that seen in previous experience in normal rats, after the same period of time after inoculation. In the lungs no more than two or three small greyish foci at the most could be detected, and there was little or no microscopic evidence of tubercle, while the average number of colonies cultured from the submaxillary and mesenteric glands was similar for the vitamin A deficient and the normal group.

It was concluded that under the conditions of this test the vitamin-A deficient rats showed no greater susceptibility than normal rats to tuberculous infection.

Expt. 2.—This experiment differed principally from the foregoing in the particular that the rats were not infected by a single exhibition of the micro-organism, but were fed it continually by mouth during the time they were suffering from the vitamin-A deficiency, with the aim of procuring a greater degree of absorption through the abnormal mucosa.

The diets were similar to that described for the preceding experiment. During a period of six weeks groups of rats on the vitamin-A deficient and on the normal diets received on eight occasions, with their food, in doses of 10 c.cm., mixed sputum from patients with phthisis. Several rats died after 82 to 116 days, and the others were killed at from 112 to 119 days for comparison. A comparison of the number of colonies obtained from the mesenteric glands suggested the possibility that there had been a somewhat greater absorption of tubercle bacilli in the vitamin-A free group, than in the group on normal diet. No macroscopic tuberculous lesions were observed at autopsy in the mesenteric glands or in the organs, in rats on either vitamin-deficient or normal diet, and the failure to find bacilli in emulsions of the lungs indicated that there had been little if any dissemination of tubercle bacilli.

It was concluded therefore that absence of vitamin A from the diet had not lowered the resistance of this refractory species to any extent such as to allow the invading tubercle bacilli to produce macroscopic tuberculous lesions.

Summary and Conclusions

1. A study has been made of the development of the lesions of a- or hypo-vitaminosis A in rats. The metaplasia (or hyperplasia) and keratinisation of epithelium is confirmed, and its loss of normal structure and function regarded as the essential feature of the deficiency. The infections found in vitamin-A deficiency are of a special type, limited in origin to epithelial tissues, and not seen in the absence of neighbouring keratinisation. They appear, that is, to be attributable to the xerosis, deficient secretion of mucus, and desquamation (which may set up local irritation, and obstruction in ducts, &c.). With provision of vitamin A, the epithelium becomes normal again and the local infections disappear. If the avitaminosis is allowed to develop the local infections spread, and the destruction of the integrity of the epithelium is presumably responsible for absorption of the fortuitous infecting micro-

organisms (normally non-pathogenic), and septicæmia may result.

2. The claim that rats become susceptible to tuberculosis when depleted of vitamin A, which appears to support the theory of a generalised anti-infective action for the vitamin, could not be substantiated. When the bacillus was fed by mouth some evidence was obtained suggestive of increased absorption in vitamin-A deficient rats, but not of any lowered general resistance to the spread of tuberculous disease.

3. The existing data afford no basis for the belief that vitamin-A therapy is likely to be effective in combating acute general infections due to specific highly pathogenic micro-organisms, or in those clinical toxæmias and infectious diseases which are unassociated with the peculiar structural breakdown of epithelial tissue, and the attendant localised infection, which characterises the vitamin deficiency.

The importance of ensuring that diets are adequate in vitamin A cannot, of course, be gainsaid. But measurements by my colleague Dr. Thomas Moore, to be presented in a later paper, show that in various types of commonly occurring infections, terminated by death, there were often abundant vitamin-A reserves, so that any advantage to be derived from the administration of the vitamin in such cases, with the aim of rectifying a non-existing deficiency, would remain to be proved.

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THE LONDON HOSPITAL.—At the quarterly court, Sir William Goschen, chairman of the hospital, said that, after conference with the medical and surgical staff, much headway had been made with a definite scheme for the provision of private wards for paying patients. The scheme would not to any considerable extent affect the existing accommodation for ordinary patients and would not entail any additional building. It was reported that the demand for the London Hospital catgut had increased to such an extent that the quarters devoted to its preparation have become entirely inadequate, and a spacious laboratory site has been taken in close proximity to the hospital. Although only £6000 has been obtained towards the complete scheme for a Students' Hostel, it is needed so urgently that it has been decided to start on a section of the building and to add to it as means permit. It is proposed to form a London Hospital League, with the out-patients for its nucleus.

ON THE QUANTITY OF VITAMIN A PRESENT IN THE HUMAN LIVER

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THE experiments of Wilson[1] suggested to me that it would be of interest to study the vitamin-A reserves possessed by the population of Holland, as indicated by the Carr-Price values given by specimens of liver obtained in the course of post-mortem examinations. In January, 1929,[2,3] I published a preliminary report describing the examination of 242 specimens. Since that time the work has been continued, and in the present communication data obtained from 957 specimens will be reviewed.

METHOD OF RESEARCH

Previous work has shown that the liver is the storage place of vitamin A in the body. Hence we are enabled, by an examination of the liver, to learn the quantity of vitamin A in the whole body.

Specimens of liver (two pieces from different parts in most cases) were taken at post-mortems carried out in the Binnengasthuis, Amsterdam (Prof. W. M. de Vries), in the Wilhelminagasthuis, Amsterdam (Dr. Hammer), in the Pathological-Anatomical Laboratory, Utrecht (Prof. Josselin de Jong). The post-mortem for the Crown was carried out by Dr. Hulst, of Leiden. On arrival at the laboratory, the pieces were placed in an ice-chest, and examination begun as soon as possible. A special examination undertaken for this purpose showed that the quantity of vitamin A of the liver undergoes no change on decomposition of the tissues.

The vitamin was extracted by a process consisting essentially of trituration with anhydrous sodium sulphate, followed by Soxhlet-extraction with light petroleum. Control experiments proved that this method gives results almost identical with those given by the alkali digestion method used by Moore, and that the results given by duplicate pieces of liver are usually identical (if not an average is taken). The vitamin A was estimated by the Carr-Price antimony trichloride technique, using a Lovibond tintometer. For convenience of comparison values have been expressed in the blue units (b.u.) used by Moore.*

Besides vitamin A the liver also contains carotene, which also gives a blue colour in the antimony trichloride reaction. The quantity present, however, is usually negligibly small in comparison with the amount of vitamin.

Classification of Material

The post-mortem findings have been classified in four groups: (1) stillborn or died very shortly after birth; (2) killed by accident; (3) death through acute disease; and (4) death through a chronic disease.

The first group must be reviewed quite separately; the three others both together and apart. In the case of the last two groups the classification of the diagnosis has sometimes been somewhat arbitrary. As far as possible the principal cause of death has been chosen.

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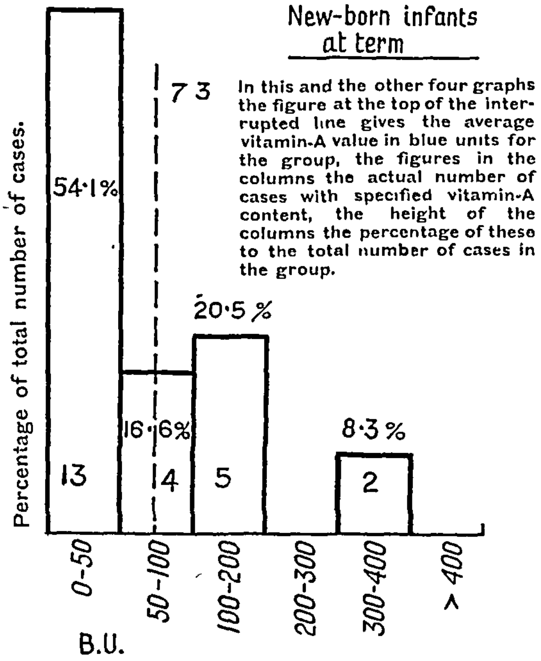
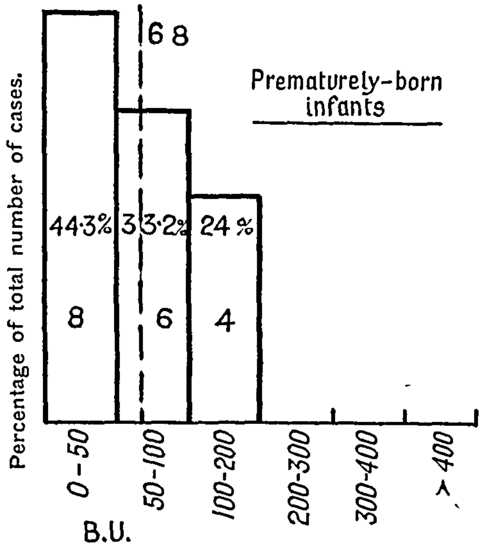
* The values given in this paper should actually be increased by 10 per cent. to be directly comparable with Moore's data, since in Mc[illegible] rrection has been made for the dilut[illegible] by the vitamin solution. This diverg[illegible] range of experimental error, and in any case is of little significance in comparing values which vary over wide ranges. The unit I used in my calculations was approximately 10 or 11 times greater than the unit of Moore; I had chosen that unit because it corresponds somewhere about the unit determined by experiments on rats (see O. Rosenheim: Biochem. Jour., 1927, xxi., 1331).

It will be clear that specimens taken at autopsy must be unsatisfactory material for acquiring a knowledge of the vitamin-A reserves of the normal individual, since three possible complications must be recognised: (1) that the quantity of vitamin A may have been reduced by disease; (2) that the quantity of vitamin A may have been increased by special diets; (3) mortality may be greater among those patients having a low reserve of vitamin A than among those having a high reserve. A better insight into the quantity of vitamin A of the normal individual will therefore be afforded by examining specimens from cases who have died as a result of accident; 78 accident cases have been examined. In addition, the category of acute diseases contains many cases which can be put on the same footing—e.g., acute hæmorrhage. To other acute diseases, of course, objection (3) may also apply to a considerable degree; that (1) and (2) play an important part here is less probable. In any case, considerable caution in drawing conclusions must be exercised. The difficulties outlined above can only be overcome by a very large number of determinations.

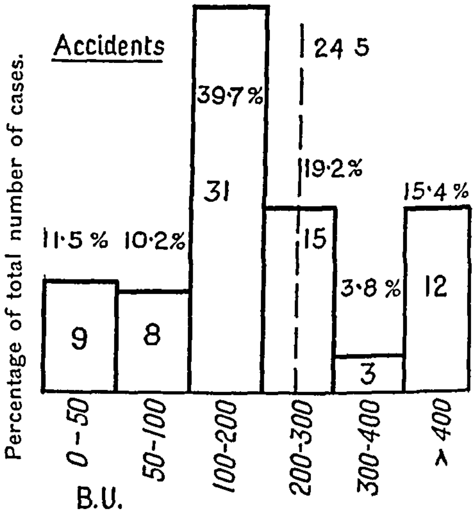


In this and the other four graphs the figure at the top of the interrupted line gives the average vitamin-A value in blue units for the group, the figures in the columns the actual number of cases with specified vitamin-A content, the height of the columns the percentage of these to the total number of cases in the group.



NEW-BORN CHILDREN

The material at my disposal was undoubtedly abnormal (Table I.). Of the 42 cases, 18 were prematurely born. Moreover, some of those born at the normal term were certainly pathological. Although a single child (surgical extraction) gave the relatively high value of 400 b.u. per gramme of liver, the average for the 42 children was only 70 b.u. For those born at the normal time the average was 73 b.u.; for those prematurely born 68 b.u. Among these two groups no fewer than 14 (9+5) had no perceptible quantity of vitamin A.



In general the average for infants was much lower than in the older people. It may be assumed that among the class of people whose children are born in hospital, most of the offspring come into the world deficient in vitamin A. We should certainly bear this in mind both when regulating the expectant mother's diet and the new-born infant's. As will later appear, we have reasons to assume that the expectant mother in Holland has but a small stock of vitamin A, a not inconsiderable portion of which she has to give up to the child.

TABLE I.—*New-born Infants*

Born at Term

	Cases.	Per cent.
0 b.u.	9	37·5
1– 50 „	4	16·6
51–100 „	4	16·6
101–200 „	5	20·5
Higher than 200 „	2	8·3
	24, Av. 73 b.u. per g. liver.	

Prematurely Born

	Cases.	Per cent.
0 b.u.	5	27·7
1– 50 „	3	16·6
51–100 „	6	33·2
101–200 „	4	24·0
	18, Av. 68 b.u. per g. liver.	

Total 42 cases, average 70 b.u.

ACCIDENTAL DEATH

Specimens from 78 cases of accidental death have been examined (Table II.). The average vitamin-A content amounted to 245 b.u., individual cases varying between 0 and 1210 b.u.

TABLE II.—*Accidental Death*

b.u.	Cases.	Per cent.	b.u.	Cases.	Per cent.
0– 50 ..	9 ..	11·5	200–300 ..	15 ..	19·2
50–100 ..	8 ..	10·2	300–400 ..	3 ..	3·8
100–200 ..	31 ..	39·7	400–960 ..	12 ..	15·4

If we assume that 50 b.u. signifies a very low reserve of vitamin, then we find 9 cases (11·5 per cent.) falling short of this standard. We find a relatively low average at the ages from 30–40 years; the small number of cases, however, makes this observation of questionable significance.

ACUTE DISEASES

Data obtained in cases which have been ill for a short time only may contribute towards obtaining an insight into the quantity of reserve of vitamin A possessed by normal individuals. We must not forget that in a number of cases the disease may have arisen just because the reserve of vitamin A was low. Thus a connexion between sepsis and a lack of vitamin A has been postulated by Mellanby. From the present results (Table III.), however, it would appear that most acute diseases bear no relation to low vitamin-A reserves, since the mean average of 225 b.u. is practically identical with that of accidents (245 b.u.).

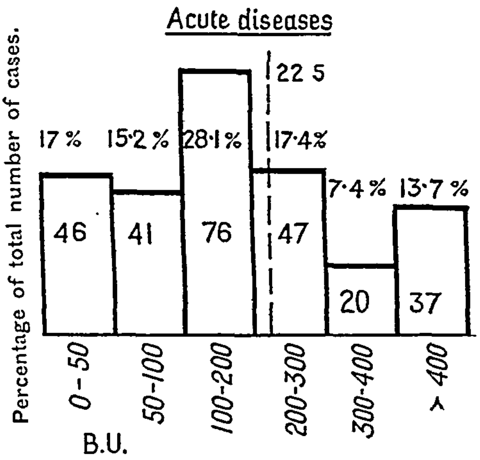


TABLE III.—*Acute Diseases*

b.u.	Cases.	Per cent.	b.u.	Cases.	Per cent.
0– 50..	46 ..	17·0	200– 300..	47 ..	17·4
50–100..	41 ..	15·2	300– 400..	20 ..	7·4
100–200..	76 ..	28·1	400–2400..	37 ..	13·7

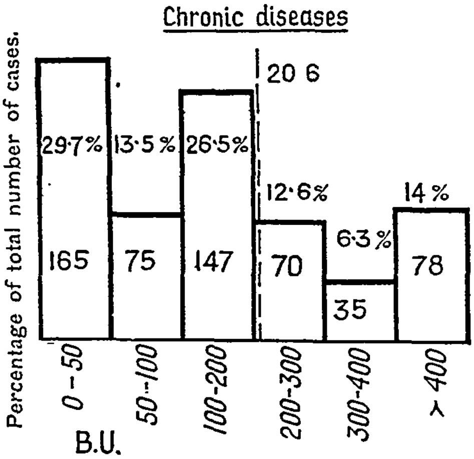
	Cases.	Average b.u.
Acute yellow liver atrophy	3	147
Poisoning	2	560
Embolism	7	126
Rupture of the uterus	3	75
Apoplexy	19	225
Heart-seizure	5	232
Hæmorrhage	4	190
Ileus, invagination	9	361
Peritonitis, acute appendix	28	250
Sepsis (average of 22 cases 182; one case had a value of 3520 b.u.) ..	23	327
Erysipelas	9	129
Pneumonia, lobar	47	211
Broncho-pneumonia	47	180
Measles	8	199
Whooping-cough	12	123
Diphtheria	13	382
Other infectious diseases	4	164
Otitis media, acute meningitis ..	19	250
Phlegmons, &c.	5	151
Total	267	225

Taking these results as a whole we find that 17 per cent. of the cases had reserves of less than 50 b.u. per g., or, in other words, that the food of about one-sixth of the population is partially deficient in vitamin A.

Individual acute diseases.—Results considerably below the average were found in 7 cases of embolism (126 b.u.), and in 3 cases of rupture of the uterus (73 b.u.). In general low values were observed in puerperal cases. Of the 7 lung embolisms, 2 were after parturition (124 and 45 b.u. respectively), 2 cases of sepsis puerperalis gave 80 and 164 b.u. In all, 7 cases gave an average of 126 b.u. This finding agrees with the results of experiments in the Utrecht Laboratory of Hygiene on the quantity of vitamin A in the blood, in which gravidæ and puerperæ had been characterised by a very low amount of vitamin A in the serum.

The cases of sepsis had an average above the mean average—viz., 327. One case among them, however, gave an exceptionally high value (3520 b.u.). If this case is omitted an average of 182 is obtained, which is slightly below the general average. The number of cases, however, is too small to draw a conclusion either for or against Mellanby's view that a low reserve of vitamin A predisposes to sepsis.

Cases under phlegmons had almost a normal average; whooping-cough cases gave rather low results. The rest of the acute infectious diseases had an average higher than the mean average; 13 cases of diphtheria in particular gave a very high average (382). On the whole the general average corresponds closely with that in the accident group.



CHRONIC DISEASES

Of cases falling in this group 570 have been examined (Table IV.). With regard to their classification, it has been impossible to avoid being arbitrary, but as far as possible the diagnosis of the cause which must be held responsible for death has been chosen.

In this group the mean average of 206 is but slightly lower than in the preceding groups. We find 165 cases (=29·7 per cent.) giving values of less than 50 b.u. This is double the percentage found in the other two categories, which may readily be explained by the unhealthy state of the patients.

Individual chronic diseases.—Attention may first be directed to the few diseases in which very low values have been found. Thus syphilis III. and IV. gave an average of 102 b.u. This low value may possibly be ascribed to the influence of liver changes, and it is noteworthy that six cases of cirrhosis of the liver gave a very low average (71 b.u.). These results lend support to the view that the liver is the site *of the conversion of carotene to vitamin A*, which has not yet been proved with certainty. In the second place it might be suggested that the storage power of the liver is reduced in diseases of this organ. Diseases of the kidneys (usually chronic nephritis) also have a low average (129 b.u.), the cause of which cannot as yet be stated.

TABLE IV.—*Chronic Diseases*

b.u.	Cases.	Per cent.	b.u.	Cases.	Per cent.
0– 50	165	29·7	200– 300	70	12·6
50–100	75	13·5	300– 400	35	6·3
100–200	147	26·5	400–1200	78	14·0

	Cases.	Average b.u.
Heart diseases	102	163
Malignant tumours	159	173
Tuberculosis of the lungs	66	200
Other forms of tuberculosis	30	242
Syphilis III. and IV.	33	102
Kidney diseases	54	129
Diabetes	25	484
Cerebral and spinal diseases	22	255
Prostate—hypertrophy	8	298
Leukæmia, chron. anæmia	12	192
Ulcus ventric. et duodeni	16	382
Lung gangrene	5	254
Enteric fever	3	11
Liver cirrhosis	6	71
Bronchiectasis	3	108
Emphysema	3	284
Exophthalmic goitre	5	350
Diverse chron. suppurations	8	215
Gangræna pedis	3	142
Spina bifida	2	100
Various	5	169
Total	570	206

An exceptionally low average (11 b.u.) was observed in three cases of enteric fever. The number of cases, however, was too small to justify conclusions.

Very high values were found in diabetes (484 b.u.), which may readily be explained by vegetable dieting. The high values in surgical and miliary tuberculosis were probably caused by the customary cod-liver oil therapeutics.

SUMMARY

Specimens of human liver have been collected from 957 cases at autopsy. The quantity of vitamin A per gramme of liver has been determined colorimetrically in each case. Table V. recapitulates the information already given.

TABLE V.—*Recapitulation*

	Cases.	Average b.u.
Accidents	78	245
Acute diseases	267	225
Chronic diseases	570	206
	915	228
New-born infants	42	70

Of the 915 cases :—

b.u.	Cases.	Per cent.	b.u.	Cases.	Per cent.
0– 50	220	24·2	200–300	132	14·5
50–100	124	13·6	300–400	58	6·4
100–200	254	27·9	400–higher	127	14·0

From data obtained upon cases killed by accident or dying from acute diseases, there is good reason to believe that 16 per cent. of the population of the Netherlands have definitely subnormal vitamin-A reserves. In the case of chronic diseases this proportion amounted to 24·2 per cent., which may indicate some connexion between certain chronic diseases and deficiency in vitamin A. Under the following headings, embolism, pregnancy, whooping-cough, syphilis III. and IV., chronic nephritis, and enteric fever, values considerably below the average were found. In cases of sepsis the divergence from the average was not so distinct. In view of the small numbers of cases examined in some diseases, however, the element of chance cannot be completely ruled out.

The vitamin-A reserves of the new-born, taken as a class, fell very much below the general average.

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STUDY OF THE
NAIL-BED CAPILLARIES AND HISTAMINE RESPONSE IN RHEUMATISM

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AND

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THERE is now much evidence of the association of defective peripheral circulation with the rheumatic syndrome. The sensitivity of arthritics and fibrositics towards climatic change is traditional. Thomson and Gordon [1] speak of chilly sensations and bluish extremities and of susceptibility to cold and damp, signs of vasomotor instability. Attention has been directed by Pemberton [2] to evidence indicative of a disturbance in the circulation, particularly in capillary areas. The same author [3] shows that the lowered glucose tolerance in arthritis may be influenced by vasodilators, and in treatment means to increase the capillary flow are adopted. Simpson [4] proves by the oscillometer a definite spastic condition of the bloodvessels of the foot or finger in cases of arthritis. *Acta Rheumatologica*, the journal of the Ligue International contre le Rhumatisme [5] puts it thus: "All of us are convinced that the irregularities of the circulation of the blood in the skin are one of the essential factors in the causation and continuance of rheumatic conditions."

Visual observation of the capillaries was first recorded by Heuter.[6] Lombard [7] described the method of placing a drop of oil on the skin, focusing a strong light and using a low power of magnification. Since then several investigators have published diagrams and photographs, among which it is necessary to refer to the important work of Lewis.[8] Crawford and Rosenberger [9] used the cinematograph. Brown and Lamb [10] described simpler apparatus for the observation and photography of the capillaries using polarisers. Pemberton [11] found the capillary field of an arthritic to be markedly different from normal. Diagrams are given to show these differences.

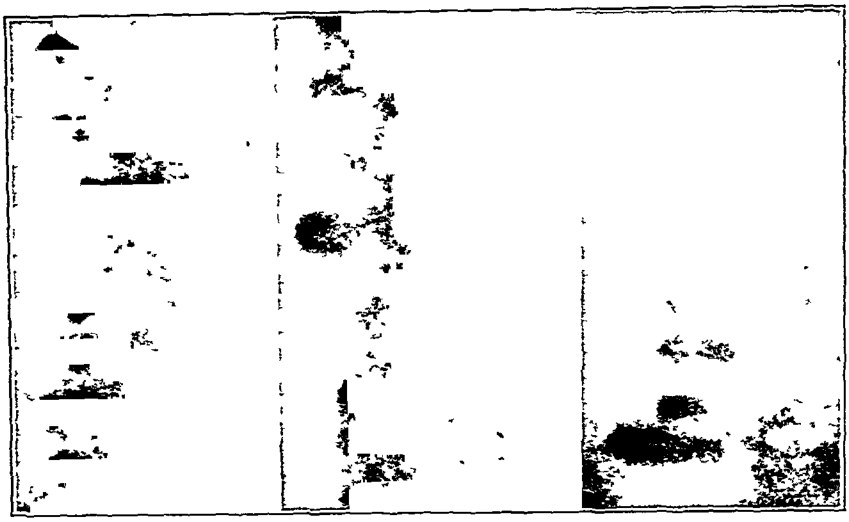
The present study of the capillaries of the nail-bed was made to determine what were the actual differences, if any, in form or number, in rheumatic cases as compared with normals, and relied largely on photographic methods. Improvised apparatus was first used in 1930 and successful photographs were obtained, but the arrangement was cumbersome. Later, with the apparatus supplied by Leitz, very satisfactory results were obtained. The magnification used was ×60 and the length of exposure half a second.

The nail-bed capillaries were chosen in this series of observations in preference to those of any other part of the body for convenience in rapid examination of patients with the Leitz apparatus, which is *only* adapted for this site; because the identical capillaries may easily be found for re-examination; and because the loops in shape and position readily lend themselves to measurement.

In order to find whether it was desirable to use any particular finger as a standard, observations were made on all the fingers of both hands with several subjects, but the appearances did not differ appreciably. The second or third finger was taken for examination in the following cases.

More than 100 cases of fibrositis and arthritis and 36 normals have been examined. Four pathological and three normal photographs are reproduced here. They are chosen not because they exaggerate the characteristics to be described but because they represent certain types of picture observed.

FIGS. 1 2 3



Photographs of nail-bed capillaries in three normal subjects. (×60.)

Normal A.—Male, 19 years. The loops are thick but without any appearance of stasis. There is a uniform and dense frontage of loops. All are curly, and the ratio of visible lengths in focus to diameter across the turn is about 3 : 1. (Fig. 1.)

Normal B.—Male, 36 years. Loops are thick, fairly numerous, and show indefinite outlines. This latter condition seems to be common to many normal capillary fields. A few of the loops are attenuated. (Fig. 2.)

Normal C.—Female, 34 years. Shows a preponderance of straight loops which, although indistinct, are short, and the field is well filled. (Fig. 3.)

The factors to be noted in a normal picture are, except the last, such as might be expected to promote an efficient blood-supply, viz.: (1) Uniform well-filled frontage of thick loops (average diameter—i.e., distance across—0·05–0·06 mm.). (2) Usually a large proportion of curled loops. (3) Loops are short—i.e., they ascend and descend quickly from the arterioles to the venules. (4) Frequently the thick epidermis prevents a well-defined picture. This may have some bearing on the relative insensibility of a healthy subject to climatic variations. In the normal picture there is usually a lack of clear outline of the individual capillaries.

CASE 1.—Female, 54 years. Diagnosis: fibrositis. In this the loops are separated so that only about half the normal number appear. The average diameter of a loop is about 0·03 mm. and the calibre of each is attenuated. About one-third are curly. (Fig. 4.)

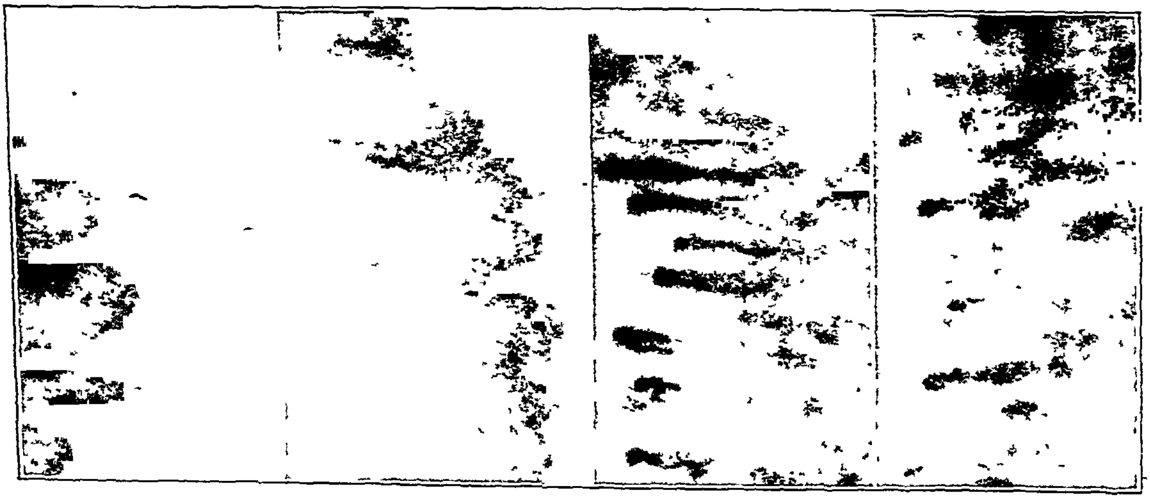
CASE 2.—Female, 41 years. Diagnosis: infective arthritis—indeterminate focus. These are typical fibrositic loops. The number per linear unit at one focal depth is low. The diameter of each is 0·03 mm., while the ratio of length to diameter is about 7 or 8 : 1. Discontinuities are visible, and are due to plasma spaces. The red cells, singly or in clumps, can be readily seen travelling round the loops in this type of picture. The calibre is fine, and twisted vessels are few in number. (Fig. 5.)

CASE 3.—Male, 68 years. Diagnosis: osteo-arthritis. There is an average number of loops but each vessel is very long and attenuated. (Fig. 6.)

CASE 4.—Female, 50 years. Diagnosis: fibrositis and arthritis. Another type is shown here. The glomerular appearance is normal, but the calibre is intensely fine. (Fig. 7.)

The rheumatic pictures show some or all of the

FIGS. 4 5 6 7



Photographs of nail bed capillaries in four arthritic subjects. (×60.)

following characters which (except the fourth) are indicative of circulatory deficiency: (1) a paucity of loops; (2) considerable attenuation present in all cases and consequent tendency to discontinuities; (3) usually (but not in all cases) long, straight loops parallel with and close to the surface, which permit (4) in general, a clear, crisp photograph. There appears no doubt that in most, if not all, cases of well-established rheumatic conditions the capillaries are in a spastic state, though we cannot yet affirm whether this state is specific to these conditions.

RESPONSE TO HISTAMINE

Recent research furnishes evidence that the capillaries are capable of changing their calibre in response to various impulses,[12] chemical, nervous, and physical. A sympathetic control operates indirectly through the hormonic mechanism. As examples of the chemical regulation, dilatation may be produced by histamine and constriction by adrenaline or pituitrin. In view of the constricted condition of the capillaries found in the rheumatic subjects examined, it was surmised that such cases might show variations in their response to histamine injections as compared with the normal reaction. Curtis Bain (personal communication) states that the typical flush seen in a normal case after an injection of histamine was in certain cases absent in young people with acute rheumatism.

Lewis [8] describes a simple method by which the skin reaction to histamine may be produced. A drop of dilute solution is placed on the forearm and pricked in superficially so as not to cause bleeding. The solution is then wiped off. After a time the capillaries in the vicinity are dilated, with the appearance of a pink flare and later of a small circular wheal. We adopted this procedure and the solution used was 1 : 2000 histamine acid phosphate.

TABLE I.—*Histamine Test in Normal Subjects*

Sex.	Age.	Appearance in seconds.		—
		Flare.	Wheal.	
M	40	60	110	—
M	27	—	140	—
M	21	30	100	—
M	25	60	90	—
M	44	70	145	Traces of rheumatism.
M	18	60	90	—
M	45	30	110	—
F	50	20	70	—
M	25	40	130	—
M	36	30	130	—
M	25	—	150	—
M	42	—	100	—
F	37	90	240	These appear anomalous.
M	50	—	240	
M	60	60	140	Traces of rheumatism.
M	45	—	150	" " "
M	44	—	180	Very sensitive to cold.
M	50	—	170	No rheumatism but had rheumatic fever in childhood.
		Av. of 11 : 50	Av. of 18 : 138	

Several of the "normals" showing higher values are subject to occasional symptoms of a rheumatic nature. One subject (180) states he has no rheumatism but is very sensitive to cold.

In certain cases the flare was so faint as to be inappreciable. Where this occurred the times were not recorded. In every subject, however, the wheal appeared after a measured time. In normals (Table I.) the flare appeared between 20 and 90 seconds (average of 11 cases, 50 seconds) whereas the wheal first became noticeable in from 90 to 240 seconds (average of 18 cases, 138 seconds). Similarly in pathological subjects (Table II.) the flare appeared between the same limits (average of 18 cases, 53 seconds), and the wheal between 80 and 240 seconds (average of 23 cases, 167 seconds). Thus in the rheumatic patients examined the superficial vessels were somewhat less sensitive to the chemical substance causing dilatation. The great variations observed in both normals and abnormals make it desirable that many more tests should be made to confirm such an important finding.

TABLE II.—*Histamine Reaction of Rheumatic Patients at Various Stages of Treatment*

Sex.	Age.	Diagnosis.	Appearance in seconds.	
			Flare.	Wheal.
M	46	"Gouty rheumatism"	—	160
M	45	Arthritis	75	180
F	40	Infective arthritis	70	120
F	48	Fibrositis	40	120
•F	25	Rheumatism	20	140*
F	31	Fibrositis, hypothyroidism	40	80
M	59	Sciatica	50	200
F	53	Fibrositis, with myositis	60	180
F	44	"Rheumatism"	60	210
M	69	Fibrositis	90	190
M	48	"Rheumatism"	50	180
M	60	Rheumatoid arthritis	70	150
M	59	Muscular rheumatism	—	150
M	41	Chronic rheumatism	40	180
F	*50*	*"Rheumatism"*	*50*	145
M	55	Rheumatoid arthritis	90	240
M	27	Articular rheumatism	20	240
M	50	Post-rheumatic fever	50	170
F	56	Arthritis	60	120
F	46	Rheumatoid arthritis	—	150
M	60	Muscular rheumatism	—	150
M	45	Fibrositis	25	150
F	43	"Rheumatism"	—	240
			Av. of 18 : 53	Av. of 23 : 167

* Allergic.

One of the aims of treatment of rheumatic cases is to bring about an increase of skin function, which might reasonably be supposed to be associated with greater sensitivity towards a dilator substance. Ten cases at the Royal Bath Hospital were tested for histamine response upon entering and again just before leaving the hospital after a three-weeks' treatment (Table III.). The point at which the flare just appeared was, under the conditions of experiment, so difficult to determine accurately that the times were disregarded. The appearance of the wheal, however, was more definite. In five subjects there was little or no difference in the time taken by the wheal to appear, but in the other five a distinct

TABLE III.—*Histamine Susceptibility of Patients before and after "Spa Treatment"*

Sex.	Age.	Appearance of wheal (in seconds).	
		Before treatment.	After treatment.
F	56	120	120
M	64	170	170
M	59	200	205
F	46	150	150
M	52	150	140
F	44	210	180
M	48	180	150
M	41	180	140
F	43	240	200
F	28	190	150
		Aver. 200	164

In the first five subjects there was little or no difference in susceptibility to histamine after treatment. In the second five subjects there was a distinct increase in susceptibility.

reduction of the time of response was observed. The averages were 200 seconds before treatment as against 164 seconds after treatment.

A further study may logically be directed to determine possible differences in purely infective and non-infective cases, and the existence of a hypothetical constrictor substance. It should also elucidate the effects of spa and other remedial measures more fully in terms of capillary physiology.

SUMMARY

The nail-bed capillaries of normals and rheumatic patients have been compared by photographic methods. Well-marked differences have been found and described.

The normal skin is slightly more responsive to the histamine test than the pathological cases examined.

An increase of skin sensitivity to histamine has been found in a number of cases after spa treatment.

We desire to thank Prof. B. A. McSwiney of the University of Leeds for helpful criticisms and advice, and the honorary medical staff of the Royal Bath Hospital for the provision of some of the cases.

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Clinical and Laboratory Notes

SIGNIFICANCE OF "ANNULAR SHADOWS" IN RADIOGRAMS OF THE CHEST

BY JOSEPH SOWERBUTTS, M.B. CAMB.
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SOME fifteen years ago, as a result of improvements in radiological technique, attention was first drawn to what seemed to be a type of cavity different from that usually seen. The ordinary tuberculous cavity usually appears in a severely affected area; it has an irregular outline, though not of necessity a definite visible wall, and is more transparent than the surrounding tissue.

The new type of cavity, the subject of this paper, differed in important respects. Its appearance (see Figure) was that of an opaque ring, regular in outline, of a more or less uniform thickness of from one-sixteenth to one-third of an inch, enclosing a circular or oval space from one to three inches in diameter. In addition, it was noticed that there was neither increased opacity of the lung immediately outside the ring, nor, necessarily, increased translucency within it. Clinicians, moreover, began to point out that these "annular shadows" differed considerably from the ordinary cavities, both as regards the accompanying symptoms and as regards the physical signs they produced.

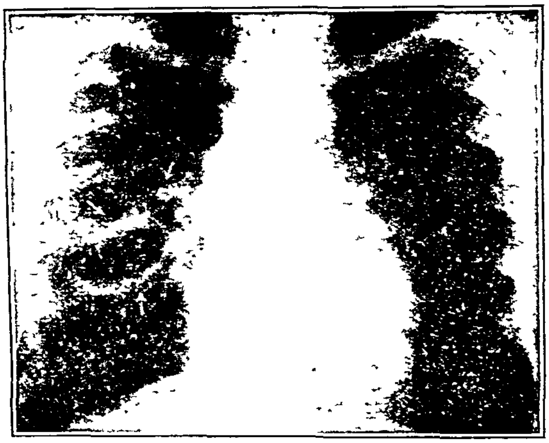
As regards the symptoms, opinions were somewhat at variance, much depending upon the extent of the associated disease, but it was generally agreed that these shadows might enlarge markedly, and yet the patient might display no symptoms of any kind. As regards the signs, however, observers at least have always been agreed: it is the rule for these shadows to produce no physical signs.

Clinicians having pointed out the distinctions between annular shadows and the ordinary cavities, various suggestions were put forward as to the probable pathogenesis of the former. The following theories were advanced:—

(1) That they were air pockets in the pleura in the region of the interlobar fissures.
(2) That they were localised pneumothoraces.
(3) That they were "pleural rings"—a term used by Amberson to indicate circular adhesions of the visceral and parietal layers of the pleural.
(4) That they were true tuberculous cavities.

These theories were considered by many observers to be quite inadequate to explain all the phenomena, but it was not until 1930 that any new hypothesis was put forward. Mitchell[1] then suggested an entirely original explanation. He considered that the shadows ought to be renamed "air-cysts" because they contained encysted air, and that their mode of origin was as follows:—

> "A small bronchus or bronchiole, weakened by disease and strained by coughing, becomes perforated and allows air to escape into the connective tissues of the lung. It does not become an interstitial emphysema, but a single bubble of air."



The typical appearance of annular shadows.

He explained the sudden enlargement of these air-cysts on the principle of the Bramah press, the pressure in the bronchial perforation during coughing producing a high pressure in the cyst. The ring shadow is produced by the compressed tissues constituting the cyst wall. Mitchell further stated that he had never known an air-cyst to be detected by clinical methods: no amphoric or cavernous breathing was present, and the percussion note differed little or not at all from that of the surrounding lung. If the perforation in the bronchus healed, the encysted air became absorbed, the compressed tissues re-expanded, and the ring disappeared, leaving no trace in the radiogram.

The following case is of interest, because it illustrates the inadequacies of the previous theories, while Mitchell's theory would seem to be capable of explaining the majority of the observed facts.

A girl, aged 18, was first seen in October, 1929. She gave a history of five weeks' lassitude and cough; she had

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[1] Mitchell: Proc. Tuberc. Assoc. Meeting, Oxford, Jan. 20th, 1930.

had one hæmoptysis. She had lost weight and was at that time 8 st. 9 lb. There was also dyspnœa on exertion.

Examination revealed the presence of moderately extensive tuberculosis in the upper zone of the right lung, and she was sent to a sanatorium, where an artificial pneumothorax was induced on the right side.

She returned to St. Thomas's Hospital in July, 1930, much improved. Her weight was 9 st. 4 lb., and she was free from cough or other symptoms. An X ray film showed the right lung to be moderately collapsed, with apical adhesions. Artificial pneumothorax treatment was continued and the patient remained symptomless and apyrexial. X ray photographs were taken at three-monthly intervals and these showed the rapid development of an annular shadow in the collapsed lung. During the whole of this time the patient remained free from symptoms and was gaining weight steadily. Moreover, her sedimentation rate was normal, showing the absence of any marked degree of tissue breakdown.

In addition, a careful examination of the X ray films taken during this time showed that the position of the annular shadow had changed with the collapsing lung; furthermore, it could be seen in both the anterolateral and oblique views, and it caused "bulging" of the edge of the lungs in the anteroposterior film.

If the previous theories of the origin of an annular shadow are considered in the light of the above case, it will be seen that those which maintain its pleural origin are inadequate to account for the facts; thus it will be seen that annular shadows are not accounted for by: (1) pleural rings; (2) localised pneumothoraces; or (3) air pockets in the region of the interlobar fissures. The remaining hypotheses are the "true cavity" theory and Mitchell's view. Now, had this shadow been a true enlarging tuberculous cavity, one would have expected at least a cough with sputum, probably a rise of temperature and a loss of weight, and a sedimentation curve outside normal limits. None of these were present, and the rapid disappearance of the shadow which followed lends additional support to the view that it was not produced by a true cavity.

Clinical and radiological evidence would seem therefore to support Mitchell's air-cyst theory; but as yet the existence of these air-cysts has not been recognised by pathologists. A word may perhaps be said upon this point: a recent cyst would probably pass unnoticed, for it would collapse immediately upon section. An older cyst, in which, perhaps, tuberculous infection had supervened, would be expected to appear as a spherical cavity, with a soft wall covered by recent necrotic material; this type of cavity can be seen at times and differs markedly from the common type of spherical cavity which has a smooth, firm, and fibrotic wall. It is possible therefore that careful work by pathologists would prove the significance of annular shadows as determined by clinician and radiologist.

I am indebted to Dr. G. T. Hebert for his permission to publish this case.

POST-OPERATIVE HÆMORRHAGE IN NOSE AND THROAT OPERATIONS

TREATMENT WITH CLAUDEN

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F.R.C.S. Edin.
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Hæmorrhage after operations on the nose is comparatively rare, since packing for 24 hours with such gauzes as Iodoform-styphnon or those prepared with adrenaline or bismuth usually suffices to prevent it. There are two ways of removing such a packing.

If hæmorrhage is expected then the best way is not to remove all the gauze at once, but rather to remove only the length which presents dark, dry blood. Once a piece covered with red, moist blood presents itself one ceases to withdraw the gauze. In this way, beginning 24 hours after the operation, the removal may be spread over 12 to 24 hours. If possible, however, it is better to remove all the gauze after 24 hours, for a tight packing left in the nose may cause local sloughing of the septum and a perforation or may result in otitis media. This last complication is improbable within 48 hours if an antiseptic gauze is employed.

The gradual removal or the complete removal of the gauze may be more painful than the operation itself and so I always anæsthetise the patient with a mixture of 2–3 c.cm. of ethyl chloride and 4 c.cm. of ether in an ethyl chloride inhaler before I proceed to remove it in one piece. This anæsthetic is the one I usually employ for tonsillectomy performed on children with Popper's guillotine or in a case requiring paracentesis of the tympanic membrane. In a case of tonsillectomy I allow the child to take 40–50 inhalations, but in removing a nasal plug from an adult 20 inhalations are ample, for only a momentary anæsthesia is required.

If there is nasal bleeding after removing the plug I order hæmostatic serum and large doses of sodium bicarbonate, whilst locally the nurse inserts a small plug of cotton-wool soaked in Clauden. Of all the styptics I have tried, clauden, which is an extract of lung tissue, is the most efficacious. It is made by the Luitpold works in Munich and may be injected or administered orally, as it is not affected by the digestive ferments of the stomach or intestine.

Oral administration is said to be suitable for sufferers from hæmophilia and preceding operations to increase the coagulability of the blood. In such cases four tablets (0·25 g. each) may be swallowed without water morning and evening before meals.

Clauden may be administered *intramuscularly* (10 c.cm. of a 2 per cent. solution three times a day). Thus given it may be employed on the day before, and one or two hours before an operation. It may also be given intravenously 10 to 20 c.cm. three times a day, even 40 c.cm. have been given intravenously with a total dose of 100 c.cm. in 48 hours.

If clauden is given *intravenously* it must be administered slowly from a syringe not sterilised in alcohol. Intravenous injection is contra-indicated in pronounced hypertension and in arterio-sclerosis, but in such cases it may be given intramuscularly.

Of intravenous and intramuscular injection I have no experience, for I have only employed this preparation orally and locally in nose and throat work where I have employed it in tablets, powder, and a 2 per cent. solution. It is applied as follows:—

In *post-operative tonsillar hæmorrhage*, the tongue is depressed wth an electrically-lit spatula, the clots are removed from the tonsillar fossa, and then a ball of cotton-wool soaked in clauden is pressed into the fossa for a few minutes. This arrests the hæmorrhage. I then employ the powdered clauden and with a powder blower insufflating the powder over the whole tonsillar fossa. With slight hæmorrhage insufflation of the powder suffices. As a matter of fact the nurses always have the solution and powder at hand and arrest the hæmorrhage before I arrive. In the post-operative treatment of gradual diathermic coagulation of the tonsils I have given the patient the powdered clauden and a powder blower, and at the first trace of hæmorrhage the patient insufflated clauden herself on to her tonsil. In such cases it is invaluable as it arrests the hæmorrhage and so allays the patient's fears and avoids the necessity of summoning a physician.

In two cases (mother and daughter) of *multiple angiomata* of the nasal mucous membrane the application of the fluid clauden by the patients themselves was sufficient to control the periodic hæmorrhages.

In a case of *epistaxis* from Kesselbach's area I arrest the hæmorrhage with cotton-wool soaked in the solution and then employ the cautery; or if the whole mucous membrane is oozing, as in the aged, I cocainise the nose and then pack it with gauze soaked in the solution. Finally, in such cases I tell the patient to carry a box of ampoules of the solution and cotton-wool in his pocket or handbag so that he may apply the remedy himself in case of hæmorrhage or where hæmorrhage may be expected.

However, if one meets a bleeder or hæmophilic these measures will not succeed.

Recently I did a Howarth radical frontal sinus operation on a man aged 29, all went well for eight days and he was due to leave the nursing home on the ninth day. On the eighth day a slight hæmorrhage occurred. It recurred in increasing amounts daily for four days in spite of packing the nose under an anæsthetic with clauden and administering it by mouth and injecting hæmostatic serum and peptone. On the fourth day Dr. Sinclair Miller gave a transfusion of 600 c.cm. citrated blood. This arrested the hæmorrhage for 36 hours, when another large hæmorrhage occurred. Dr. Miller then repeated the transfusion and following the second transfusion there was no serious hæmorrhage.

Before I knew the power that transfusion had in arresting hæmorrhage I operated on a patient aged 55, who had had profuse multiple nasal hæmorrhages. As he also had a deviated septum he was advised to have this straightened. For a week after the operation all was well, then after a nasal dressing profuse hæmorrhage set in, which was not controlled by the cautery. Finally I had to resort to the desperate measure of employing surgical diathermy; this was successful but resulted in continuous crusting and ozæna.

The object of this note is partly to draw attention to clauden as a local hæmostatic; but it is also written to show the dramatic effect of transfusion in arresting uncontrolled hæmorrhage.

PERINEAL TUMOUR IN AN INFANT

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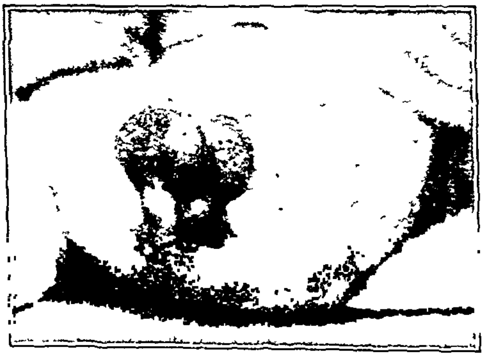
A male baby was recently brought to hospital because of the presence of a tumour in the perineum. The child was a full-term normal delivery and there were no details in the family history worthy of note.

Fig. 1



The perineum showing divided scrotum and tumour.

On examination of the site of the lesion (Fig. 1) the following abnormalities were detected :—

The scrotum was divided, one testicle being present in each complete half. The penis and prepuce were set further back than normal and there was hypospadias. The anus was not in the midline, but was displaced to the right and slightly forwards. Situated on the left side of the perineum was a bright red nodule the size of a grape, with a semilunar sulcus at its base anteriorly. This sulcus was ¼ in. deep and ended blindly.

The mass was removed without difficulty and the child was sent home. Sections were made in the long axis of the nodule, which was considerably smaller after removal when the blood with which it was engorged had escaped.

Histologically the sections show this is a mass of striated muscle bundles (Fig. 3) in which are embedded several glandular ducts (Fig. 2). These ducts are lined with columnar epithelium which in some places is several layers thick. The basement membrane is nowhere transgressed. The covering of the tumour is composed of œdematous and hæmorrhagic connective tissue with no true epithelium over it.

Fig. 2

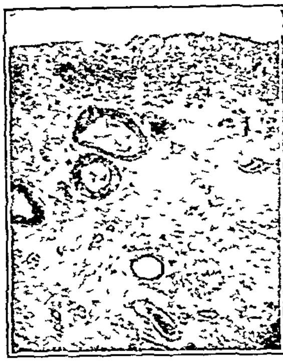


Fig. 3

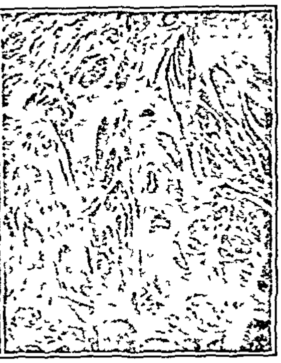


Fig. 2.—Section showing glandular ducts (× 60).
Fig. 3.—Section of tumour showing muscle bundles (× 60).

The pathological interpretation of these facts has been a source of considerable discussion, but we suggest that the glandular elements arose in connexion with the prostate or Cowper's glands and that the muscle present is derived from the superficial muscles of the pelvic floor. It has been contended that the striated muscle may be the gubernacular fibres of the internal oblique, but if this were the case, it seems to us improbable that the testicles would both have remained normal in position. Further, the malposition of the anal orifice appears to indicate a fundamental error in the embryonic evolution of the cloaca and uro-rectal septum. Since the prostate and Cowper's glands are both developed in connexion with that part of the cloaca [1] which forms the uro-genital sinus, we venture to postulate that a twist of the uro-rectal septum [2] has distorted the anal orifice so that it lies upwards [3] and to the right, while the prostatic and Cowper's elements are downwards and to the left.

The explanation of an abnormality such as the one described can at best be only conjectural, but we think this case worthy of record, partly because it is highly unusual, and partly in view of the difficulty of assessing the factors underlying its causation.

We have to thank Sir Arthur Keith for his interest and suggestions, and Dr. John Menton for his help in preparing the presentation of this case. The photograph of the child was taken by Dr. R. G. Johnson, and the two photomicrographs were made in conjunction with Mr. W. H. Fussell.

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Wellington Cottage Hospital, Shropshire.—A new wing, comprising a children's ward, private wards, an X ray installation, and a theatre, has been opened by Lady Bridgeman. The cost was £3000.

BRITISH MEDICAL ASSOCIATION

CENTENARY MEETING IN LONDON

SECTION OF MEDICINE

At a meeting of this section, with Sir THOMAS LEWIS, F.R.S., in the chair, a discussion on

Coronary Thrombosis

was opened by Dr. JOHN PARKINSON (London). Coronary thrombosis, he said, blocked the vessel affected, producing cardiac infarct of the area supplied; in addition it might precipitate intracardial thrombosis or pericarditis. The disease commonly occurred in a man over 40, who had often been in good health previously, but who might have been inconvenienced for months or years by anginal pain on undue exertion. He would suddenly begin to feel a dull, heavy pain in the chest, which he often fancied was indigestion, and which grew steadily more intense. He began to sweat, might vomit, and sometimes fainted. Often the pain extended through to the back and down the arms; it was continuous, but, unless he died, it began to abate after the lapse of two or three hours. On examination he was found to be pale and restless; the pulse was usually regular and moderately increased in frequency, but the rhythm was sometimes disturbed by fibrillation or heart-block. There was usually a rise of temperature a day or two later. The blood pressure fell shortly after the attack, which might be followed in a day or two by congestive heart failure and sometimes embolism. Coronary thrombosis was associated with arterio-sclerosis and was commoner in men than in women; an attack might precede the onset of fibrillation, flutter, or heart block. The lack of physical signs was apt to hinder recognition, which usually depended on the symptoms and history. The patient should be asked to map out the area of pain with his finger; sternal pain was a strong diagnostic point. Electrocardiography gave valuable evidence. Perforated gastric ulcer, acute cholecystitis, spontaneous pneumothorax, and pulmonary infarct must be excluded. If the patient weathered the first few days he was likely to recover, and a second attack was relatively infrequent. Morphine was the most important item in treatment at the outset; digitalis could be given as soon as signs of congestion appeared. The patient should be kept at rest in bed for a minimum period of six weeks, and in order to enforce this it was wise to explain the condition to him. When he was able to get up convalescence should last from three to six months. When he first described angina pectoris in 1768, Heberden said some attacks were short and others long; he was describing a composite picture of coronary thrombosis and the angina of effort. The conception of coronary thrombosis as a separate entity was of recent origin. The term angina pectoris might still be used to cover both conditions, though they were to be recognised as distinct. It was time to reconsider the prognosis in angina pectoris. Many patients recovered from an attack of coronary thrombosis, and patients with the angina of effort might live for many years. Angina of effort was incurable in so far as the coronary arteries were affected; but the process might be arrested or some degree of collateral circulation might be established to that section of the myocardium. The popular conception of angina pectoris applied to the disease in its severer forms, and a brighter view was justified. The patient would find life worth living and might live longer than was commonly supposed.

Prof. W. T. RITCHIE (Edinburgh) said that the patient with coronary thrombosis was seldom a woman, and was usually a man in the sixth or seventh decade of life. Valvular disease was rarely present; the blood pressure had sometimes been high for years, and sometimes the patient had suffered from previous attacks of anginal pain. Often he was seized with pain while at rest or in bed, sometimes following a physical or emotional strain. The pain might be xiphisternal, præcordial, or epigastric, and might radiate down the arms or into the neck. There was often fear of impending death and a sense of constriction of the chest. Usually the patient was afraid to move, but he might be restless, rocking himself to and fro; he was generally collapsed, livid, sweating, and groaning, and often retched or vomited. The pulse, if perceptible, was thready and rapid; the blood pressure had usually fallen, sometimes registering a systolic pressure as low as 60 mm. The pain might last 12 to 14 hours in spite of morphia injections. In rare cases there was no pain but only collapse, and sometimes dyspnœa. Auricular fibrillation, flutter, tachycardia, or auriculo-ventricular heart block might be present. In fulminating cases the patient might be gasping for breath or exhibit Cheyne-Stokes breathing; pulmonary œdema might develop, with copious, frothy, blood-stained sputum, bubbling râles being heard over the lungs. At autopsy it was often necessary to exhort the pathologist to seek minutely for the infarct. If the patient recovered he usually became mildly febrile a few days later, but the temperature subsided within three or four days. In about 10 per cent. of cases a pericardial rub was heard, which might vanish in a few hours or persist for several days. He had never found signs of pericardial effusion. There was danger of recurrence in the first few weeks, and in his experience half the cases died in the first fortnight. About 5 per cent. appeared to recover, and in the remaining 45 per cent. there was danger of fibrillation, angina of effort, aneurysm of the heart, or progressive heart failure developing.

Sir THOMAS LEWIS (London) said there was no distinction between the character of the pain in angina pectoris and in coronary thrombosis; the distinction lay in the duration of the pain. In the angina of effort pain ceased when the effort ended; in coronary thrombosis it lasted for hours or days. Parry had attributed anginal pain to ischæmia of the cardiac muscle. Burn had drawn attention to the resemblance between the pain of angina and the pain in a limb deprived of blood. Evidence had been collected to show that the pain was due to the accumulation of metabolites acting upon the sensory nerve-endings in the ischæmic muscle. He suggested that a similar picture was true in the case of the heart; if a vessel was narrowed, pain developed when the heart was pressed to do more work than it was accustomed to do. The pain was not spasmodic or stabbing, but continuous. This conception of the condition explained why amyl nitrite gave relief in the angina of effort but not in coronary thrombosis; amyl nitrite could open up the narrowed vessel but not the occluded one. It also explained why angina of effort might disappear after an attack of coronary thrombosis: the narrowed artery became permanently occluded, and after recovery from the attack of thrombosis no longer gave rise to pain.

Prof. W. E. **Hume** (Newcastle-on-Tyne) said that it was difficult to make an immediate diagnosis between coronary thrombosis and the angina of effort, as pain and collapse were the chief symptoms in both. The picture was much more alarming in coronary thrombosis than in angina of effort; the patient was livid and collapse was marked. Nitrites gave no relief and might do harm; repeated doses of morphia were necessary to control the pain. Shock and collapse might form the dominant picture with little complaint of pain. Or there might be symptoms of acute pulmonary œdema with frothy blood-stained sputum and fine crepitations in the lungs; a pericardial rub was sometimes heard. The appearance of the patient might sometimes suggest pneumonia, but the pain was not increased by deep breathing and the temperature was not high enough. The diagnosis sometimes had to be made from gall-bladder disease. It must be remembered that some cases of toxic angina had been relieved by removal of a septic gall-bladder or appendix. An attack of coronary thrombosis, in which the liver was congested and tender, and the muscles in spasm over it, might easily be confused with disease of the gall-bladder, and early gross arrhythmia of the heart might save the patient from an unnecessary operation.

Dr. **Carey** F. **Coombs** (Bristol) said that in a series of 144 patients with coronary thrombosis, one-third died during the attack and one-third during the following year. Those over 70 bore the calamity less well than younger patients. On the whole the prognosis was worse if pericardial friction was heard. The pulse-rate was an unreliable sign and might remain normal till the fatal termination of a case. The pulse pressure was significant, and might sometimes fall to 25 per cent. or less of the systolic blood pressure, and such narrowness was an unfavourable sign; unfortunately the converse was not true—patients with a wide pulse pressure were not necessarily likely to recover. Rise in the pulse pressure and blood pressure were favourable signs. Complete rest and full doses of morphia were essential to treatment.

Dr. D. E. **Bedford** (London) said that the sign of most significance in the electrocardiogram of these patients was the opposed direction of the R—T segment in leads I. and III., and this was almost pathognomonic of coronary thrombosis. The T-waves began to be affected in the second week as a rule, and it was common to find some return to normal in the first six months. Other forms of curve might be found, however, and a normal curve did not exclude a diagnosis of coronary thrombosis.

Prof. **John Hay** (Liverpool) mentioned anomalous cases in which the patient might become unconscious for 10 to 20 minutes and convulsive movements might be present, leading to errors of diagnosis. Dyspnœa was often absent in coronary thrombosis, and diagnosis should not depend on it. The pain, besides being continuous, varied in intensity, waxing and waning. Vomiting and tenderness over the liver, especially when associated with rigidity of the right rectus, led to errors of diagnosis.

Dr. **John Oille** (Toronto) thought that many mild cases of angina pectoris were overlooked and might be going about undiagnosed. Recent work went to show that coronary thrombosis was engrafted on an inflammatory, not a degenerative lesion, and it was therefore worth while removing foci of infection in these patients. At autopsy old healed infarcts were sometimes found in the heart, suggesting that some cases were entirely symptomless. Heroin relieved pain better in some cases than morphia, and was less inclined to favour vomiting. After a severe attack the patient should be kept in bed at least 12 weeks.

Dr. **Jenner Hoskin** (London) thought that thrombosis might depend to some extent on increased viscosity of the blood, and treatment might possibly be directed towards lessening this. He had found venesection helpful where there was marked congestive heart failure.

Dr. E. **Stolkind** (London) said that in his view angina pectoris depended on several factors—namely, (1) chemical and toxic substances circulating in the blood; (2) the influence of the autonomic and vasomotor nervous systems; (3) stimuli from the nerve-endings in the heart and aorta. The attack was brought on by the interaction of these factors; the part contributed by any one factor might vary, provided their combined influence was sufficient to provoke an attack. He emphasised the importance in the treatment of prolonged rest, and low, almost salt-free diet given in seven or eight small meals daily.

Prof. F. **Volhard** (Frankfort) referred to the importance of Sir Thomas Lewis's contribution to the question of pain, and the view that it had its origin from chemical substances produced in the ischæmic area of muscle. He agreed that a salt-free diet was of the first importance.

Prof. **Oliver** K. **Williamson** (Witwatersrand) read a paper on Internal Spasm as a Cause of Cerebral Cases of Transient Paralysis of Cerebral Origin. He described cases in which patients suffered from variable attacks of transient motor paralysis, with loss of consciousness and clonic spasm of the affected muscles; he suggested that they might be explained on the supposition of spasm of the cerebral arteries, similar to the spasm sometimes observed in branches of the retinal artery, and associated with loss of sight in the area supplied.

SECTION OF ANÆSTHETICS

At a meeting of this section when Dr. **Wesley Bourne** (Montreal) presided a discussion on the

Care of the Lungs in Anæsthesia

was opened by Dr. H. W. **Featherstone** (Birmingham). Formerly, he said, post-operative lung disorders were usually summed up as "ether bronchitis" or "ether pneumonia." Recent research had been devoted to post-operative massive collapse of the lung, and attention drawn to the therapeutic and prophylactic value of carbon dioxide diluted with air or oxygen. Ether vapour had an irritant effect on respiratory mucous membranes, but sound technique rendered this ill-effect negligible. Impurities such as ketones and peroxides were harmful and should be avoided by using only the purest ether. It was essential that the ether should be well vaporised, for a cold spray of ether droplets was particularly irritating. It was Shipway who first drew attention to the importance of giving ether vapour warmed, and his apparatus was most valuable. The proportion of ether vapour in the inhaled mixture should be as low as is practicable. In dogs massive doses of ether caused petechial hæmorrhage and pulmonary œdema; in lesser concentration narcotic drugs paralysed the vasomotor control of the blood-vessels of the lungs. It was common experience to find that the lungs of patients affected with subacute bronchitis a week or more before operation cleared up rapidly after administration of ether. Although the more serious risks of chloroform anæsthesia were due to damage to the cardiac nerves, heart muscle, and liver, the frequency of post-operative pneumonia suggested vasomotor disturbances. Nitrous oxide and ethylene were comparatively inert towards the respiratory epithelium; they were to be chosen in chest surgery and for the prolonged multiple operations of plastic surgery. Spinal analgesia had not proved a certain method of avoiding lung sequelæ; paralysis of some of the intercostal muscles possibly conduced to immobility of the lower lobes and pulmonary congestion. Marked lowering of blood pressure might reduce the resistance to infection. On several occasions within a few hours of intrathecal injection of a local analgesic he had seen a slight bronchitis develop into definite consolidation of the lungs. In spinal paraplegia involving the lower intercostal muscles carbon dioxide accumulated in the blood and oxygenation was deficient. Lesions of the dorsal region of the spinal cord were usually complicated by bronchitis or pneumonia. Splanchnic analgesia therefore by preventing reflex inhibition of the respiratory muscles should be a safeguard and many workers were satisfied that it was. Dr. Featherstone then briefly outlined the chief attributes of "closed," "open," and endotracheal ether administration.

Considering the effect of the operation, Dr. Featherstone held that posture was of little importance. The site of operation however might exert powerful influence on the state of the lungs. In diseases of the stomach, starvation or indigestion or delayed absorption of food might predispose to lung disease. The effects of malnutrition were shown by the high mortality-rate from post-operative pneumonia just after the war. Purgative and pre-operative starvation were to be avoided; rectal feeds of glucose and water were of value. Operative shock was a potent cause of lung disease; damage to tissues, loss of blood, and chilling of the body before and during operation were to be avoided as far as possible. Disturbance of metabolism and of the organs of defence occurred during anæsthesia; in a patient already suffering from poor general nutrition, from drug addiction, or from circulatory failure, special care was needed to spare the lungs from irritation and the body from toxic effects. Patients who had suffered from pneumonia during the year or two before a major operation were specially liable to post-operative pneumonia. The importance of avoiding anoxæmia must be borne in mind, and additional oxygen given to those whose respiratory exchange was embarrassed by deformity of the chest, paralysis of respiratory muscles, laryngeal obstruction, loss of function in part of the lungs from injury, emphysema, frothy excretion, or shallow breathing as the result of shock or overdose of anæsthetic. In the surgery of toxic goitre extra oxygen was a safeguard both during operation and recovery stage.

Massive collapse of the lungs after operation had been variously explained. Some believed that occlusion of bronchioles or a bronchus by inflammation, spasm, or secretion was followed by absorption of the imprisoned air and collapse of the affected area. Reflex disturbance of the vagus and sympathetic innervation of the lungs was held accountable by others. Others again attributed the condition to paralysis or inhibition of the respiratory muscles due to trauma or post-operative disturbance. Sir Charlton Briscoe believed that contraction of the crural portion of the diaphragm was diminished after an operation and deflation of the lower lobes of the lungs followed. His own opinion, said Dr. Featherstone, was that post-operative massive collapse was the result of several factors acting in conjunction; rigidity of the abdominal wall from pain and trauma, reflex inhibition of the diaphragm, congestion and œdema of quiescent lower lobes, swelling and spasm of bronchioles, inhalation of infective material, closure of bronchioles and absorption of air, all were concerned in its causation. The work of Band and Simson Hall, he said, seemed to show that viscid secretion, abolition of cough reflex, and limitation of respiratory movement were the chief factors.

Sir CHARLTON BRISCOE (London), who illustrated his views by a series of radiograms, said that pulmonary conditions were perhaps the commonest abnormalities arising after operations. Two points were of paramount importance. First, during anæsthesia by inhalation inspiratory efforts of great magnitude occurred, deeper than in dyspnœa, and almost as deep as in asphyxia. Secondly, after return to bed the patient was exhausted, all movements were painful, and those of respiration were limited to the minimum requirements. After abdominal operations full freedom of respiratory and other movements did not return for a week or ten days. Prolonged quiescence, post-operative or otherwise, with minimal respiratory needs, led to diminution of the size of the thoracic cavity, accentuated by the supine posture. He had shown that the shrinkage in the capacity of the thoracic cavity was due to elevation of the diaphragm into the chest, the lungs accommodating themselves to this shrinkage by deflation or de-aeration of the lower lobes, sometimes accompanied by over-distension of the upper. Deflation of the lower lobes constantly followed quiescence and minimal respiratory efforts, conditions which were present after abdominal operations in which the supine posture, pain on contraction of incised muscles, and depressed vitality were regular features. Normally this condition of deflation caused no symptoms, called for no examination, required and received no treatment. But it could not be neglected in the pathogenesis of post-operative pulmonary conditions. The activity of the lower lobes was in abeyance, but the blood-supply continued to exercise its function of nourishing the bronchial lining. Mucus was secreted; the cells of the bronchial walls and alveoli desquamated. It is quite common, he said, for patients after operation to accumulate mucus containing many and varied organisms in what might be called the "test tube" bronchus; absence of pyrexia and of leucocytes in the sputum showed that these bacteria were not pathogenic. A short non-productive but moist cough was present; expectoration was difficult in the deflated lung, for air did not get behind the sputum. The mucus was expectorated between the fifth and sixth day, and as a rule did not reaccumulate. If the bacteria became pathogenic the sputum was more abundant and purulent, it tended to reaccumulate, and pyrexia was present. More severe infection led to bronchial or lobar pneumonia. Pleurisy might accompany the latter. Massive collapse resulted from the onset of pleurisy in a patient in whom the lungs were deflated. The infection was probably of extra-pulmonary origin. It was remarkable how many of those who developed complications after operation had shown mild pyrexia the day or so before operation; 48 hours was the common incubation period for colds and bronchitis, and he had little doubt that infection about the time of the operation was helped by the deep inspirations produced by inhaling the anæsthetic.

It had been recommended to induce big respiratory efforts once or twice daily as a routine measure after operations, but the methods advocated were not without pain and discomfort. If the bronchi to the deflated lower lobes were not infected such expansion of the lungs would serve no purpose; if infection was present the contents of the bronchi would simply be more deeply inhaled. The contents of the bronchi could best be got rid of by deep inspiration, followed by short sharp expirations, the area of the incision being supported with a hand. A Burney Yeo inhaler, with some bland fluid, worn constantly was of assistance. Expectorants, stimulants, poultices, and so forth would be required if the infection spread further down. The pain and alarming symptoms of the massive collapse attack were relieved rapidly, as in other cases of pleurisy, by controlling the movement of the affected side by strapping or a spring belt. It was important to ensure that abdominal respiration was reacquired before getting up; neglect of this was a common cause of asthenia, breathlessness, and thoracic pains. Prophylaxis was all-important. The upper respiratory tract and teeth should be disinfected. Operation should be postponed if the patient felt chilled, if fever or increased pulse-rate was present. Any one of the team who was developing a cold should be sent away, and the patient should be protected from contact with infection during the first few hours after operation till the diminished immunity, local and general, produced by the anæsthetic had been repaired.

Dr. GEOFFREY MARSHALL (London) said that disease of the lungs might be a natural consequence of the illness for which the patient was subjected to operation, and that in many cases it would have occurred if there had been no operation or anæsthetic. Improved technique in anæsthesia could do little to prevent infection reaching the lungs via the blood stream, and still less to diminish the number of cases of infection of the lungs or the tragedies of pulmonary embolism. Primary responsibility for massive collapse of the lungs could not be attributed to the anæsthetic; there were, however, a large number of cases of bronchitis, broncho-pneumonia, and pulmonary abscess which might be prevented by more perfect technique. Except in great urgency a thorough overhaul should be made of the mouth, to eradicate open sepsis in the teeth and gums. Resistance was not built up by starvation and irritant purges. He had been greatly impressed during the war by the rapid recovery after extensive abdominal operations of soldiers whose chief preparation for operation had been a heavy meal of meat and vegetables. Incidentally there was a remarkable absence of vomiting during and after the anæsthetic. Damage to the lungs could be avoided by the choice of nitrous oxide or ethylene with oxygen, and the use of these anæsthetics would be more widespread if surgeons did not complain of insufficient muscular relaxation, particularly in abdominal surgery. But if general anæsthetics were administered in sufficient concentration to abolish the tone of a well-developed abdominal wall, they must do definite harm to the patient. If the abdominal muscles were to be paralysed this should be done by infiltrating them with a local anæsthetic. The procedure was easy, and could be carried out in two minutes by a practised surgeon.

The posture of the patient under an anæsthetic was of importance chiefly in relation to aspiration of secretion and foreign materials. Lung abscess after tonsillectomy was much commoner in America where the patient's head was raised during operations than in this country. He had seen several cases of lung abscess following extraction of teeth under nitrous oxide, the patient sitting up in a dental chair, and he was surprised this sequel was not more frequent. The importance of keeping the head below the level of the shoulders during operations on the upper respiratory passages was generally recognised, and there would be fewer post-operative pulmonary complications if this posture were employed in all operations. Posture was of special importance in anæsthetising patients known to be suffering from disease of the lungs. With bronchiectasis, fibroid lung, or chronic tuberculosis, the patient should lie on his side with the diseased lung underneath, in order to prevent infected secretions from spilling over into the comparatively healthy areas.

The discussion was continued by Dr. DAVID BOND, Dr. SIMSON HALL, Sir FRANCIS SHIPWAY, Dr. J. BLOMFIELD, and Dr. LANGTON HEWER.

Effect of Anæsthetics on the Liver

Dr. BOURNE read a paper, illustrated by graphs and diagrams, on the influence of anæsthetics on the liver. He showed experimental proof of the deleterious effects of heavy or prolonged chloroform inhalation, and the different times needed for recovery with different doses. Nitrous oxide and ethylene were shown to be innocuous provided that sufficient oxygen was given with them; the ill-effects of anoxæmia were demonstrated. Avertin also came passably through the tests; it had little effect in delaying recovery from chloroform.

In the discussion that followed, Dr. Z. MENNELL related a case in which he had seen symptoms identical with those of delayed chloroform poisoning in a patient who had had for the third time, at short intervals, an injection of avertin.—Sir FRANCIS SHIPWAY had used avertin in many cases of liver disease without mishap, and in 76 children who were given the drug he had seen no evidence whatever of liver disturbance.

SECTION OF DERMATOLOGY AND VENEREAL DISEASES

Dr. H. W. BARBER, the President of the section, took the chair at the discussion on the Principles of Diagnosis and the Modern Treatment of

Early Venereal Disease in Women

opened by Mr. J. JOHNSTON ABRAHAM (London), who confined his remarks to syphilis in pregnancy. A corollary to Colles's law was that the mother of a syphilitic child must be herself infected, though this was not generally admitted on the continent. The converse proposition that a syphilitic mother must bear a syphilitic child was certainly not true when the mother had been infected late in pregnancy. The clinical signs of early syphilis were few, and frequently tertiary lesions were the first to be noticed. The Wassermann reaction might become positive quite early, although 30 per cent. of congenital syphilitics were born of mothers with a negative reaction. All the manifestations of syphilis in women were milder and less common than in men, and the chief effects of the disease were shown not in the mothers, nor even in stillbirths nor abortions, but in their miserable children who lived. The virus did not die out, since syphilitic women could bear diseased children at any time, even to healthy consorts; nor did prolonged treatment eradicate the virus in women as it apparently might do in men. This made it subacute bronchitis a week or more before operation cleared up rapidly after administration of ether. Although the more serious risks of chloroform anæsthesia were due to damage to the cardiac nerves, heart muscle, and liver, the frequency of post-operative pneumonia suggested vasomotor disturbances. Nitrous oxide and ethylene were comparatively inert towards the respiratory epithelium; they were to be chosen in chest surgery and for the prolonged multiple operations of plastic surgery. Spinal analgesia had not proved a certain method of avoiding lung sequelæ; paralysis of some of the intercostal muscles possibly conduced to immobility of the lower lobes and pulmonary congestion. Marked lowering of blood pressure might reduce the resistance to infection. On several occasions within a few hours of intrathecal injection of a local analgesic he had seen a slight bronchitis develop into definite consolidation of the lungs. In spinal paraplegia involving the lower intercostal muscles carbon dioxide accumulated in the blood and oxygenation was deficient. Lesions of the dorsal region of the spinal cord were usually complicated by bronchitis or pneumonia. Splanchnic analgesia therefore by preventing reflex inhibition of the respiratory muscles should be a safeguard and many workers were satisfied that it was. Dr. Featherstone then briefly outlined the chief attributes of "closed," "open," and endotracheal ether administration.

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SECTION OF OPHTHALMOLOGY

Sir JOHN PARSONS, F.R.S., the President, was in the chair at the session when a discussion was opened by Mr. R. FOSTER MOORE (London) on

Ocular Manifestations of Lesions of the Fifth Nerve

He pointed out that the Gasserian ganglion is the trophic centre for all the sensory branches of the trigeminal nerve. From each cell in the ganglion a single fibre arises, and this bifurcates, sending one branch centrally to the nucleus in the medulla, and one to be distributed to the tissues. Thus the ganglion might be involved by the spread of inflammation from middle-ear disease, or in a basic meningitis, or a tumour of the cerebello-pontine angle. It was of great importance in the production of headaches. A severe or prolonged stimulus might go beyond the cells which are in immediate organic continuity with the inflamed tissues, and might involve first one and then the opposite nucleus, till pain came to be referred to the whole territory of each nerve, and, overflowing further, might cause distant manifestations of a diffuse character. Herpes corneæ, with which dendritic and stellate corneal ulcers were closely allied, was little connected with herpes zoster ophthalmicus. There was a well-established connexion between herpes zoster and varicella, and some observers urged that shingles should be recognised as an infectious disease, and one likely to become a starting point for a chicken-pox epidemic. Herpes ophthalmicus was sometimes confused with erysipelas. Herpes zoster seemed to be an acute specific disease, and some product of it shows a selective activity for the ganglion cells. But an eruption indistinguishable from it might be caused by local trauma. The average age of onset was about 55, and it seemed to be most severe in the aged. Its first accompaniment was pain of a burning and lancinating character over an area which in three days became the seat of a rash. Its most important complications were those which involved the eye, including corneal affections, irido-cyclitis, ocular palsies, and optic atrophy. Intra-ocular complications occur in about 60 per cent. of the cases, and did not usually come on until the eruption had passed its most intense stage. Irido-cyclitis was a frequent complication, with or without corneal involvement, and glaucoma might eventuate. Metz had reported 50 cases of ocular palsies complicating herpes, the third nerve being involved in 74 per cent. of them. In most cases the nerve recovered. Optic atrophy was an important complication, and it would be interesting to know whether this is associated with some regular distribution of the rash.

The pathology of herpes zoster raised the question of antidromic impulses. In this disease the sequence of events was as follows: the acute infection causes an acute inflammation of the Gasserian ganglion, followed by pain referred along the fibres of the affected cells, and, four days later, by the appearance of the rash. Mr. Foster Moore had looked for the corneal nerve-fibres by means of the slit-lamp in 130 eyes, and had seen the fibres in 115 of them. Of neuroparalytic keratitis no satisfying explanation has yet been offered. Anæsthesia of the cornea alone did not suffice to cause ulceration of it, for if the cornea was properly protected by tarsorrhaphy, ulceration did not develop.

Dr. C. M. HINDS HOWELL (London) said that the eye received its sensory innervation by the ophthalmic division of the fifth cranial nerve. Afferent impulses passed by this route to the Gasserian ganglion, and thence by the central route to the pons. The fifth nerve-fibres were exposed to injury over a very wide area, and a constant result of damage to the fibres carrying afferent impulses from the eye was desensitisation of the globus oculi, with immediate loss of the corneal reflex. The chief danger from this was corneal ulceration. The question arose, what could be done to prevent such ulceration, and if it occurred, what methods were applicable to deal with it? The condition might be due to irritation of fibres, perhaps the antidromic fibres described by Bayliss in posterior roots. If ulceration of the cornea was due to peripheral nerve irritation, it should occur whether or not the lids are stitched. But careful protection of the eye seems to minimise, and any external trauma, even slight, to aggravate the tendency to inflammation and ulceration. Dr. Hinds Howell had never seen any affections of the deeper structures of the eye following injections of the ganglion with alcohol. Herpetic eruptions occurred occasionally, but he had not seen them in the distribution of the ophthalmic division. Malignant ulcers grew more rapidly in a desensitised area. A good method of treating the eye short of stitching the lids was to keep the upper lid carefully strapped down for two or three weeks, and then to allow the lids to open under an eye-shield, which should be worn at first indoors, later outdoors only, and finally abandoned. In the event of injection of conjunctival vessels, the lids should at once be stitched. He suggested that the tendency to ulceration in the cornea which has been desensitised by injury to the ganglion was not due to trauma alone, and there was no evidence to support the theory of a trophic nerve influence.

Mr. HUGH CAIRNS (London) said lesions of the eye produced by trigeminal nerve infections were practically limited to neuroparalytic keratitis following complete division of the trigeminal nerve at operation. Complete division of the sensory root had now been largely given up. The after-care of the conditions was very important. Suturing the lids should not be done without paring the edges. Even examination of the corneal reflex by students might be enough to precipitate corneal ulceration in the presence of herpes. Fluid from herpes zoster vesicles could transmit the affection, probably because the virus travelled down the nerve-fibres into the area of vesication and produced the vesicles locally.

Dr. RUSSELL BRAIN (London) said that occasionally in these cases there were symptoms of meningitis, especially with stiffness of the neck, and he had seen a fatal case of meningo-encephalitis due to herpes zoster. Lumbar puncture should be done as a therapeutic measure. The neurologist was often asked to treat the symptoms of ophthalmic zoster, and early and adequate treatment was found to do much to relieve the pain. In many cases the injection of 1 c.cm. of pituitary extract, as soon as the patient was seen, and repeated, if necessary, on the second day, might permanently relieve the pain. So also might the intravenous injection of 50 c.cm. of a 10 per cent. solution of sodium iodide. Another treatment was by convalescent serum, 10 per cent. being injected subcutaneously. The question of X ray treatment should also be considered; no risk attended X ray applications to the Gasserian ganglion in herpes zoster, but to be effective it should be carried out between the second and third weeks, not at the onset nor at the acute stage. At the stage essential that mothers should receive adequate treatment during each succeeding pregnancy. The common opinion that pregnant women were intolerant of arsenic was erroneous. They could be given larger doses than virgins. Mr. Abraham always gave it in conjunction with mercury or bismuth. Mercury was not so well borne as bismuth, though its reputation during four centuries made him chary of neglecting it on that account alone.

Colonel L. W. HARRISON (London) welcomed this opportunity of appealing to the profession for the better diagnosis and treatment of acute gonorrhœa in the female. The beginnings of the affliction were mild, and women took little notice of leucorrhœa, which they knew could be due to many other causes. Nevertheless these discharges should all be examined, and examined thoroughly. Even stained smears failed to show gonococci in 25 per cent. of cases; smears should be supplemented by culture of the discharge, and by the complement-fixation test, which was accurate when properly carried out. The treatment of the disease was not a hopeless proposition if it were realised that the urethra and cervix could be infected as well as the vulva, and that such infection could only be diagnosed by direct examination. If the local inflammation were conscientiously treated, and the general resistance raised by vaccines, the chances of recovery were very great.

Dr. T. ANWYL DAVIES (London) discussed the early diagnosis of syphilis. By far the commonest sites for the chancre were the cervix and labia majora. Inguinal adenitis was associated with only 40 per cent. of vulval sores, and was very rare with other sites. When it did develop the glands were large and elastic. Chancres could be distinguished from erosions and other lesions by their smooth sharply defined edges, their bluish colour, and tendency to bleed and ooze serum, but it was always essential to find the spirochæte. Dr. Anwyl Davies described his course of treatment at the Whitechapel clinic. The first dose of arsenic was the largest, and subsequent doses were repeated twice a week with only a short rest between courses. By this means he considered that the spirochætes were taken at a disadvantage, and the patient continued tolerant of the drug.

Dr. E. W. ASSINDER (Birmingham) said that acute syphilis and gonorrhœa were easily cured, but both diseases in the chronic stages were very resistant. It was essential to treat an early syphilitic for at least two years, and during the course a weekly injection of mercury or bismuth should be given. He started with a large dose of N.A.B. (up to 0·6 g.), which he decreased subsequently. The presence of gram-negative intracellular cocci in a discharge was not always conclusive of gonorrhœal infection; he had observed these to lead to a false diagnosis in an epidemic of *B. coli* vaginitis in a girl's school. Cultures and the complement-fixation test should be used. Acute gonorrhœa should be treated by a thorough routine in which the raising of the patient's resistance by vaccines and general measures was the most important part. He only resorted to diathermy and the application of silver nitrate when the acute symptoms persisted after two months' treatment, and in such cases the use of a vaccine to produce a rigor was helpful.

Dr. MARGARET RORKE (London) quoted two cases illustrating the prognosis in children born of recently infected mothers. Both women had developed florid secondary syphilis early in pregnancy, both had been conscientiously treated, and had borne apparently healthy children, yet both children died and were proved at the post-mortem to be syphilitic. If, therefore, the mother was suspected of having been infected at the time of conception, the baby's treatment should be carried on after birth till adequate courses had been given. Dr. Rorke said that during pregnancy all vaginal discharges should be investigated, since they might be due to gonorrhœa, which was an important cause of late puerperal pyrexia, and chronic subinvolution of the uterus. She had frequently found chronic gonorrhœa in the mother to be the cause of vaginitis in the child.

Dr. DAVID LEES (Edinburgh) read a paper on the Prevention and Treatment of

Ophthalmia Neonatorum

He compared the still high incidence of the disease in Great Britain with its great rarity in Denmark, which he attributed to the good education of midwives and students in prophylaxis, and to its compulsory use after all births in that country. Failures and complications were due to errors of technique. Silver nitrate should never be used in a dilution of less than 1 per cent., and the eye should always be irrigated after this application. He had tried many bacterial products, used both locally and intravenously for the treatment of established cases, but had not been convinced of their value. The conditions of successful treatment were skilled attention of mother and child in a hospital, half-hourly irrigation of the eye, so that pus was never under tension in the conjunctival sac, and the occasional use of a non-irritating antiseptic.

Dr. P. B. MUMFORD (Manchester) read a paper called

Acne, a Symptom not a Disease

He quoted opinions that acne was due to invasion of the skin by superficial parasites, and described three cases to show how this invasion might be determined by such conditions as menstrual disorder, sedentary occupation, and general ill-health. He had made preliminary investigations into the physical peculiarities of a large number of girl operatives suffering from this symptom, which showed that it was common in persons with greasy skins and a poor circulation, especially when accompanied by constipation, menstrual disorders, or dental caries. He concluded that acne was not a local disease of the skin.

Dr. G. B. DOWLING read a paper on

Infective Eczemata of the Scalp

He described four ætiological groups, each of which had a characteristic age distribution. Infantile eczema was usually an infection of the "milk crust." Impetigo in children was liable to spread from lesions behind the ears, on the eyelids, or in the nose, to produce an acute weeping eczema which had a tendency to persist into adult life with chronic incurable blepharitis, sycosis, and periodical reinvasion of the scalp. *Fausse teigne* was a dry reaction to a mild streptococcal infection which should be distinguished from pityriasis capitis and ringworm. Adults were subject to a seborrhœic eczema in which staphylococci grew secondarily to an original monilia infection. This appeared most constantly on the temples and forehead and was accompanied by figured eczema on other parts of the body, which distinguished it from chronic impetiginous eczema with its history of previous attacks, and of blepharitis or post-auricular fissures.

The PRESIDENT emphasised the disablement caused by impetiginous eczema in adults. This originated in the poverty and squalor of their youth, and could only be cured by early and prolonged treatment under healthy conditions.

that the two modes of reaction can proceed simultaneously and thus give rise to clinical and histological pictures which may be in the highest degree confusing and apparently contradictory, for at the one end of the scale there are the purely inflammatory granulomata, at the other the indolent non-reactive tomato tumours. The ætiology of this important group of diseases, which to some extent both in symptomatology and evolution resemble Hodgkin's disease, the lymphosarcomata (Sternberg-Paltauf) in the malignant forms, and the leukæmic dermatoses in the benign or granulomatous types, is still a matter of speculation. The infective theory predominates. Some authorities, in view of the completely anergic results of tuberculin injections in these cases and by analogy with the similar results in granulomata of accepted tuberculous ætiology and similar histological structure, favour a tuberculous cause. But although many guinea-pigs have been inoculated no conclusive result has ever been obtained, and it seems clear that the actual cause still escapes us. If it were to be found it might have an important bearing on attempts to elucidate the problem of cancer.

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1. A Text-book of Organic Chemistry

Second edition. By Dr. JULIUS SCHMIDT, Professor of Chemistry in the Technische Hochschule, Stuttgart. English edition by H. GORDON RULE, Ph.D., D.Sc., Lecturer in Organic Chemistry, University of Edinburgh. London: Gurney and Jackson. 1932. Pp. 843. 25s.

2. Volumetric Analysis

By G. FOWLES, M.Sc., A.I.C. Assistant Master, Latymer Upper School, Hammersmith. London: G. Bell and Sons, Ltd. 1932. Pp. 202. 6s.

3. Chemistry, Life and Civilisation

A Popular Account of Modern Advances in Chemistry. By HUBERT T. S. BRITTON, D.Sc., D.I.C., F.I.C., Lecturer in Chemistry, University College of the South-west of England, Exeter. London: Chapman and Hall, Ltd. Pp. 248. 10s. 6*d*.

4. Applied Chemistry

A Practical Handbook for Students of Household Science and Public Health. Vol. II. *Foods.* Second edition. Revised. By C. KENNETH TINKLER, D.Sc., F.I.C., Professor of Chemistry in the University of London; and HELEN MASTERS, B.Sc., Head of the Domestic Science Department, Battersea Polytechnic. London: Crosby Lockwood and Son. 1932. Pp. 284. 15s.

1. Text-books on organic chemistry which aim at completeness tend to be uninspired and to amount to a recital of a long string of facts condensed in the minimum of space. This cannot be said of Prof. Schmidt's work which is readable and interesting. It has assumed rather large proportions and in bringing the second edition up to date it has been necessary to revise the whole text in order to avoid any appreciable increase in size. By curtailing the description of analytical methods in the general section space has been found for the discussion of recent work on conjugated systems, the electronic theory of valency, the mechanism of racemisation, epimerisation, spiro-compounds, the parachor, &c. In the systematic section are described recent work on the carbohydrates, terpenes, sterols, porphyrins, alkaloids, and proteins. More space has been allotted to the description of substances of biological importance than is usual in books on organic chemistry and the work may therefore be recommended as a text-book for honours students of chemistry and biochemistry as well as for graduates who wish to be informed in the advances made in knowledge on any branch of the subject since their student days.

2. Modest both in price and in appearance, Mr. Fowles's little book nevertheless contains a great deal of sound and useful information; it not only tells you what to do and how to do it, but why you do it. The author is in fact a believer in using volumetric analysis to illustrate the application of physical chemistry and we accordingly find illuminating articles from time to time on such subjects as the common ion effect, the solubility product, the mass action law, and the oxidation-reduction potential. The difficulty experienced by many readers in grasping the significance of the oxidation-reduction potential and its bearing upon biological problems is in the main due to a failure to appreciate that the phenomena of oxidation and reduction are really susceptible of electrical measurement. This difficulty at least should be largely removed by a perusal of the few pages here devoted to the subject; it is true that this is only an introductory account which stops short of mathematical formulæ, but so far as it goes it is clear and should form a sure foundation upon which to build a more advanced superstructure. Another feature of the book is the fact that it contains readable notes on accuracy in calibration of apparatus and weighing and of the influence of these factors on the results obtained; the all-important subject of indicators, too often briefly dismissed in other books on volumetric analysis, here receives adequate attention. This is a thoroughly practical little book.

3. Mr. Hubert Britton has set himself the task of sketching in simple language an outline of the many ramifications of chemistry. One chapter deals with glass, cement, and fire-fighting materials; four chapters are devoted to the applications of chemistry to vital problems including respiration and digestion. Others deal with clothing and paper, agriculture, metals and alloys, and lastly the generation of power. Mr. Britton has incorporated into one small book a wealth of miscellaneous information not easily accessible. Certain details are incorrect—such are the formula "considered to be a more satisfactory representation" for glucose on p. 109 and the number of hydrogen atoms in the formulæ given for palmitic acid on pp. 113 and 114, but these mistakes are not numerous or important. We are inclined to doubt whether the 32 pages devoted to some elementary principles of chemistry could possibly make the rest of the text intelligible to a reader who had no previous knowledge of the subject, but to one who already knows the elements of chemistry and to one who seeks ways in which to illustrate the applications of the sciences the book will prove helpful and stimulating.

4. This volume is designed to cover the food section of the course of applied chemistry which forms one of the subjects for the degree of B.Sc. Household Science of the University of London. The subject matter includes certain branches of the chemistry of food and the interpretation of analytical results; the ten chapters are devoted to milk, edible oils and fats, carbohydrate foods, raising agents, meat and meat extracts, vinegar and fruit juices, beverages, the preservation of food and poisonous metals in foods, the cooking of food, and the calorific value of foods. The book is written in a clear and practical

of post-herpetic neuralgia one had to consider interruption of the nerve by alcohol injection or by surgery. When the pain was in the infra-orbital region, especially if some sensibility remained, it was justifiable, and harmless, to try alcoholic injection of the supra-orbital nerve.

The PRESIDENT suggested that the beneficial effect of pituitary extract might have been due primarily to a chemical antagonism between the pituitary extract injected and the histamine caused by the lesion. The changes caused by the hormones were very resistant to treatment.

Mr. A. J. BALLANTYNE (Glasgow) said he had seen two cases in which ulcer of the cornea followed the giving of anti-typhoid vaccine. In certain affections of the eye, the cause was to be found in some other tissue or organ which received its innervation from the fifth, such as an iritis or keratitis, when the patient had a disease of nose, sinus, or teeth. He believed that in many cases there was a reflex vasomotor effect through the fifth nerve.

Mr. C. RUDD (Birmingham) said that of 15 cases of herpes zoster in his experience in which the Gasserian ganglion was injected with alcohol, 5 showed some ocular disturbance, 3 of them showing definite corneal ulceration, and 2 of these patients came with the pad rubbing the cornea. He found the use of a moist chamber over the eye very useful, rendering suture of the lids unnecessary; the condition healed up in two weeks. He suggested that possibly the products of degeneration of the cells and fibres following the injection had the same effect as a toxin, rendering the cornea liable to disintegration.

Mr. N. BISHOP HARMAN (London) referred to changes in the lens in association with herpes zoster or surgical interference with the fifth nerve. The ophthalmologist usually saw such cases after an attack, and in an appreciable proportion lesions of the lens could be found on the same side as the herpes lesion. Presumably the cause was a nutritive disturbance.

Mr. FRANK JULER (London) said he had not seen irido-cyclitis after alcohol injection of the Gasserian ganglion, but if the toxic products passed down the nerve one would expect such deleterious effects. It was dangerous not to advise that the eyes should be either strapped or sutured; even any septic condition present was not aggravated thereby, but tended to clear up under the bandage.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in Obstetrics and Gynæcology

By ALECK BOURNE, M.B., F.R.C.S., and LESLIE WILLIAMS, M.D., F.R.C.S. Third edition. London: J. and A. Churchill. 1932. Pp. 418. 12*s.* 6*d.*

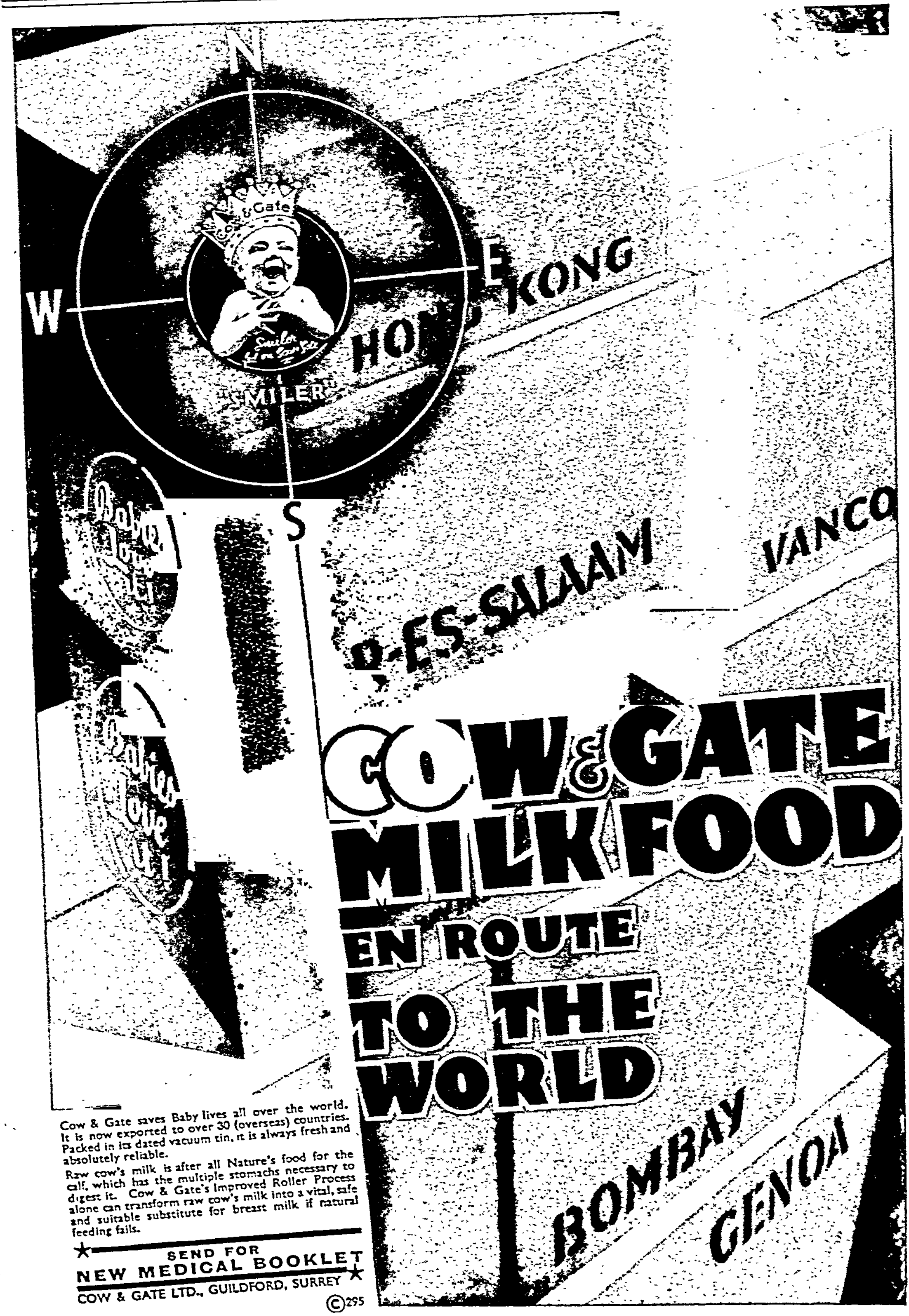
IN this third edition Mr. Aleck Bourne has enlisted the coöperation of Mr. Leslie Williams. Drastic revision and the introduction of new material have greatly altered and improved the text. In its present form the book is a work of great merit which deserves and will doubtless gain international recognition. The most attractive feature is the introduction of summaries of recent contributions to the literature and the authors have judged wisely in selecting which contributions to emphasise. As they point out in the preface, they have adopted an expectant policy towards some new work, choosing to await confirmatory evidence rather than to introduce material which may prove ephemeral. The chapter on carcinoma of the cervix will prove particularly useful, for it contains a careful account of modern radiological methods and gives a reasoned opinion on the relative merits of radiological and operative treatment. Puerperal sepsis is dealt with in great detail from all points of view, and the authors show caution in attributing results to any particular treatment. The new methods of analgesia in labour are described, and the practitioner will find an admirable summary of the available methods with their faults and merits clearly recorded. Perhaps insufficient emphasis is placed upon the gas and oxygen method; it is true that the technique demands an expert anæsthetist but if one is available the method is at least as good as any. The articles on the anterior pituitary hormones and on œstrin are up to date, but are not very critical. Due regard has been paid to Zuckerman's admirable work. There is some carelessness in the proof reading, for some names are wrongly spelled—e.g., Hitchmann, Wisener, Zuchermann. The recent views on functional uterine hæmorrhage are ably reviewed and will be welcomed particularly by students, for as yet there has been no authoritative opinion on the new work. Recent criticisms of J. A. Sampson's theory of endometriosis are noted; the theory of the lutea origin is wrongly attributed to E. S. J. King instead of to Wilfred Shaw. There is no reference to recent work on leucorrhœa; the text-book theories about this condition have been upset during the last few years by German and American contributions which should be noted in the next edition. A superbly illustrated article on X rays contributed by Dr. Courtenay Gage completes the presentation.

The authors must be congratulated; the new edition should receive the attention of practitioners, but above all it will be most welcome to senior students.

Le mycosis fungoïde

By S. LAPIÈRE, M.D., University of Liége. Paris: Masson et Cie. 1932. Pp. 122. Fr.30.

THIS is a group of cutaneous maladies in which conceptions and conclusions have long lacked order and coördination, inasmuch as the term mycosis fungoides includes "a series of affections of the reticulo-endothelial tissue." These can be divided and studied in two main categories—an inflammatory granulomatous stage, in which fever, pruritus, rheumatic concomitants, &c., are sometimes prominent, and a tumour stage, in which neoplastic changes in the dermis eventually determine generalisation and a fatal issue. *Histologically this differentiation is* similarly defined. The motley collection of cells which make up the characteristic infiltrations, on which the clinical diagnosis of the granulomatous stage is based, are normal in appearance and originate from the blood. In the tumour stage the cells have taken on a malignant appearance, and tend to group themselves in strands or tubes around which, and the vessels supplying them, are noted the usual cell reactions of cancerous invasion. The two stages are due to disease of the same tissue but with entirely different reactions, the one acute and inflammatory, the other of indolent and typically malignant type. It must be realised however



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manner and praiseworthy efforts are made to offer scientific explanations wherever possible for the various phenomena observed in cooking; it is a judicious blend of theory and practice and can be recommended as offering quite interesting reading.

Puerperal Infection

By JAMES ROBERT GOODALL, O.B.E., M.D., D.Sc., Clinical Professor of Gynæcology and Obstetrics, McGill University, Montreal. Toronto: Murray Printing Co. 1932. Pp. 189.

THIS monograph contains the substance of the lectures on puerperal infection given by the author to the final-year students of the McGill University. The arrangement of material is different from what is customary at the present day, for there is little theoretical discussion and the subject matter is presented concisely and dogmatically. The style is that of the Victorians and shows a well-marked similarity to Matthews Duncan's "Clinical Lectures." A contribution of this kind written by a teacher of experience and ability merits great attention; it should be brought to the notice of all final-year students, for they will find the problems of puerperal infection simply presented to them through the personal experiences of a writer, many of whose opinions differ from those held in this country. The monograph compares favourably with any contribution to this subject in the English tongue.

1. Evolution of Sex and Intersexual Conditions

By Dr. GREGORIO MARAÑON, Professor at the University of Madrid. Translated from the Spanish by WARRE B. WELLS. London: George Allen and Unwin, Ltd. 1932. Pp. 344. 15*s.*

2. The Sexual Side of Marriage

By M. J. EXNER, M.D., Consultant and formerly Director of Division of Educational Measures, American Social Hygiene Association. Same publishers. 1932. Pp. 252. 6*s.*

3. Is It a Boy?

By Dr. F. ÖKLAND, Assistant Professor, Aas, Norway. Same publishers. 1932. Pp. 92. 3*s.* 6*d.*

1. The title of this book indicates Prof. Marañon's thesis that sex is not an individual attribute which possesses an immutable value. It is comparable rather to age in that it evolves in successive phases to its full development, its progress being interrupted by various crises. He holds the view, by no means unique, that the sex of every individual, even the normal, is a double one and that intersexuality to some degree or other is always present even in adult years. At one end of the scale stands the obviously pathological hermaphrodite, the possessor of an ovo-testis; at the other, the more or less normal individual with an intersexual tendency, capable of being fashioned by the moulding action of environment into either the homosexual or the heterosexual. At first sight it would seem that this belief that homosexuality is always determined by an innate predisposition to homosexual practices is a pessimistic one and a discouragement to all forms of psychological treatment, but that the author does not hold this view is shown by the emphasis he lays on early training and environment. These factors, according to him, have a decisive influence on the appearance or the inhibition of the tendency. Even when a child is born with a strong constitutional substratum of intersexuality, this may never be revealed throughout the course of a long life, or may only manifest itself when the determining causes of environment operate too strongly against normal development. Prof. Marañon has interested himself in problems of sex for a great many years. He writes not only as a Spanish academician and a professor of endocrinology at the University of Madrid, but as a clinician who has been called upon to handle the personal problems of countless patients suffering from sexual troubles. His book therefore will be equally interesting to those who approach sex from the standpoint of pure science and to those who are called upon to deal with difficulties in the consulting room. The translation has been excellently carried out.

2. Dr. Exner's book is addressed primarily to men and women approaching marriageable age and to those in marriage who have difficulties in achieving happy adjustment. From a host of mediocre books written with this object, it stands out by reason of its directness, sobriety, objectivity, and literary merits. Though the author apparently enjoys a considerable professional experience of the marital difficulties of patients, he quotes freely—perhaps too freely—from the statistical material of other authors. The data of Drs. K. B. Davis, R. L. Dickinson, and G. V. Hamilton are frequently referred to in such a way as to throw their essential findings into clearer relief than they enjoy in the original volumes, which are so heavily burdened with statistics and tables as to make it difficult to see the wood for the trees. Extensive appropriate quotations are also made from the works of Frederick Harris, Knight Dunlap, Havelock Ellis, Lichtenberger, and others. The book has seven chapters. The first, entitled Sex Life, serves as an introduction to the second and third, which describe respectively the reproductive systems of the two sexes, illustrated by five excellent drawings by Dr. Dickinson, and the differences between male and female sexuality, which are treated in accordance with Dunlap's exposition. Then follow the important chapters—two upon the factors contributing to sexual maladjustment, and a third on the elements which go to make up an ideal marriage. The only shortcoming of the volume is the almost complete absence of original subject matter or treatment; it might have been written by a lay author with no first-hand experience, who had carefully digested the literature of his subject. This, however, is not a serious defect; the book is written with tact and delicacy, and it can be safely recommended by the medical man to the persons for whom it is written.

3. The flippant title of Dr. Ökland's little book belies its essentially serious aim. The question of sex determination is one in which every prospective parent is interested, and the medical practitioner is not infrequently asked what contributions modern science has made to its solution. To lay persons posing this conundrum this book can be safely recommended. In the compass of its 20 short chapters, some of them illustrated by good diagrams, is compressed a readable and instructive summary of existing knowledge on this subject. The essentials of the chromosome theory are simply explained and an indication is given of the directions in which we may look for a future solution of the problem of human sex determination. In view of the large number of misleading works that have appeared on this subject Dr. Ökland's book is welcome.

THE LANCET

LONDON: SATURDAY, SEPTEMBER 17, 1932

THE NATION'S BILL FOR HEALTH

When the family budget is hard to balance, the wise man inquires carefully into his expenditure, asking what he is getting for his money, whether it is worth having, and whether it can be obtained for a smaller price. The nation's doctor, Sir George Newman, remembers this in presenting his annual report on the state of the public health.[1] He asks, first, what are the results of the public health services, and, secondly, what are these results costing. His definition of what we are getting for our money is survival, health, and capacity. He instances the extermination of leprosy, plague, and cholera, the lower death- and infant mortality-rates, and the increase in the expectation of life by 15 years in two generations, and declares with justifiable satisfaction that the English people do not behave like a sickly or invalid people. The apparent increase of sickness among the insured population is, he points out, an increase of claim for benefit rather than an actual increase in disease, and the contention that there is no substantial saving of life at mature ages receives short shrift at his hands. In the establishment by the State of the poor-law medical services in 1838 and the public health service some ten years later, he traces the seeds of an expanding organisation which has permeated the nation and created a "national minimum" of health requirement. The one outstanding thing that the nation is not getting is an adequate improvement in the maternal mortality figures, and the investigations made and the measures recommended to deal with this blot on our national health are obviously receiving serious attention.

The surveys of the public health service which have come down from the days of Chadwick constitute a useful form of stocktaking and of ascertaining whether or not the best possible value is being obtained for money. Those made since the Local Government Act, 1929, are of particular interest in view of the changes then introduced. The medical aspects of the old poor-law are being rapidly absorbed into the public health service within the ambit of larger and more effective units of government; the poor-law institutions have been emancipated into the service of the people as a whole; and a standard of performance has been introduced whereby county and county borough councils can measure the effect of their health activities. Sir George Newman emphasises the importance of studying not only the form of the activities of a local authority, but also their function, to ascertain in what measure they secure the separation of the treatment of the sick poor from the poor-law administration, their effectiveness in a therapeutic and preventive sense, and their coördination and economic working. He stresses the importance of effective coördination of all health services in an area, and observes that in some places this essential benefit has not been achieved. Many authorities have to cope with the adaptation of out-of-date buildings to accommodate the sick as well as the chronically infirm. In some areas it may be wise to close wards altogether and to transfer inmates to well-equipped centres, where this can meet their needs, including that of accessibility to friends. Early and accurate diagnosis is as important an economic factor as prompt and adequate treatment; both may hasten the passage of the acute sick through the institution and free the beds. The need for economy should act as an incentive to close scrutiny to make sure that the fullest use is being made of existing resources. Sometimes, for example, hospital beds can be conserved by establishing an out-patient department; in other conditions better results can be obtained only if more time and more specialised skill is made available for each patient. Some local authorities are considering the desirability of a domiciliary medical service. Every medical officer of health should estimate the hospital needs of his area on a basis of local conditions and not of "hospital beds per thousand." Sir George Newman expresses himself as thoroughly satisfied with the efficiency of the tuberculosis service, remarking only on a tendency in some areas to take too narrow a view of the service, accentuating treatment at the expense of prevention, and coördination with other departments. The selection of cases for sanatorium, hospital, or observation beds is not always beyond criticism. Corresponding defects in the venereal diseases service have been revealed; there is need for more education of the public and for fuller coördination with other health activities, and facilities for bacteriological diagnosis and tests for cure are not always adequately used. Coördination with the general practitioner is on the whole good in this service. Another economic measure advocated in this report is coöperation between voluntary and municipal services. This is regarded by the Ministry as one of the most important functions of local authorities at the present time, though admittedly not an easy one to discharge.

Our national "doctor's bill" for 1931 was £57,370,000. Hospitals and sanatoriums for tuberculosis and infectious and venereal diseases took 7 million of this; another million went in salaries; nearly 2 million for maternity and child welfare: over a million for mental deficiency; nearly 4 million for school medical services; and 9 million for the poor-law medical service. Over 30 million was spent on housing, water, sewage, and refuse. The aim of Sir George Newman and those who work with him is obviously to give such good value for this expenditure that the nation will pay its annual cheque as cheerfully as the average citizen pays the account due to his family doctor.

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[1] Annual Report of the Chief Medical Officer of the Ministry of Health for the year 1931. H.M. Stationery Office. 1932. Pp. 259. 4s.

RHEUMATOID AND OSTEO-ARTHRITIS

Amidst the recognised difficulties in treatment of advanced cases of Rheumatoid and Osteo-Arthritis it is not generally realised that many patients have been restored to active life after being bedridden and suffering great pain for years.

For the description of cases see "Ambulatory Treatment of Fractures and Diseased Joints by the Hoefftcke Splint," *The Medical Press and Circular,* April 27th, 1932, pages 348–351.

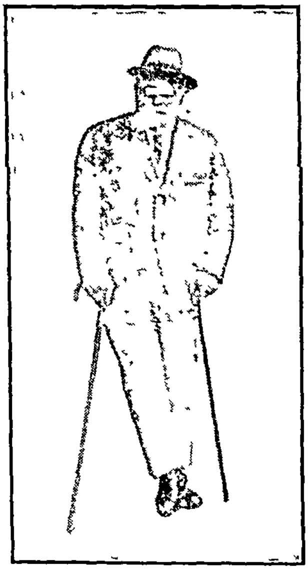

FIG. 1. July, 1929
Mr. S. Hip-joint adducted.

Mr. S., aged 67 years, was sent to me by Dr. M. with a very painful osteo-arthritic hip. The limb was adducted, with an apparent shortening of about 2½ inches. The hip was manipulated on my special extension table, July, 1929, and free movement with good abduction was obtained. Three months after my extension splint was first applied, in August, 1929, Mr. S. was enabled to go fishing and shooting without pain in the joint. Two years after the extension splint was applied it was removed, with free and painless movement as the result. Doctors in attendance and patient well satisfied with the movement and improvement in shape of the joint surface as shown in Figs. 1, 2, 3, 4.

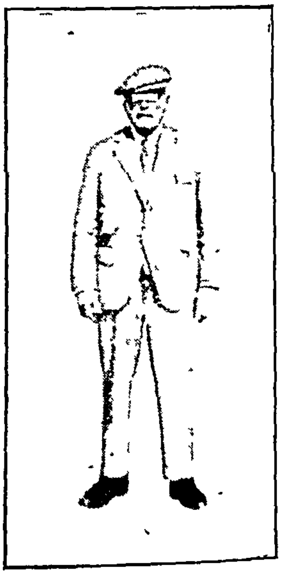

FIG. 2. February, 1931.
Mr. S. Hip-joint abducted.

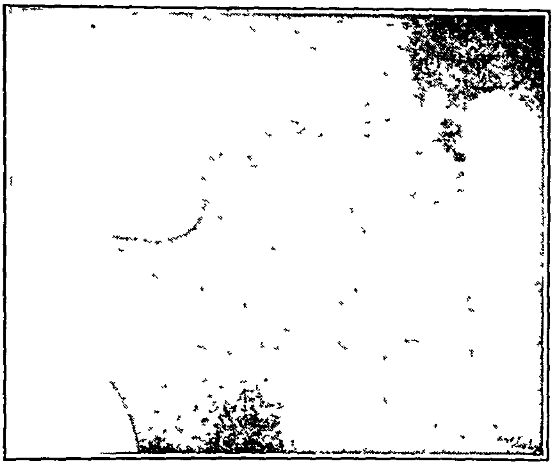

FIG. 3. July, 1929
Shows the hip-joint practically ankylosed in the adducted position with osteophyte showing one upper view of acetabulum. Patient hardly able to walk and in great pain.

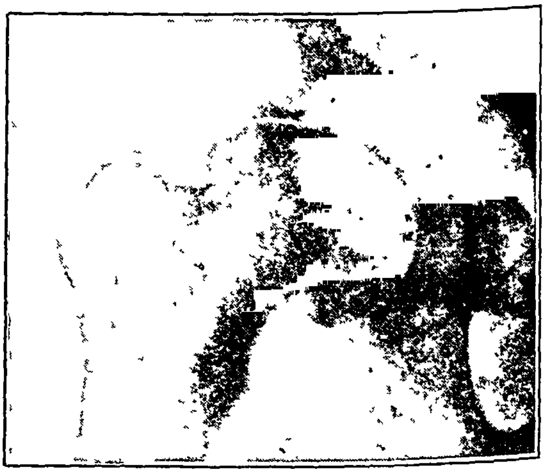

FIG 4. February, 1931.
Shows spike absorbed; cavity filled in, head of femur covered with new cartilage resulting in free abduction with full painless movement in the joint.

Particulars and illustrations of this treatment will be forwarded on application, and original radiograms of these and other cases can be shown by—

CAREL A. HOEFFTCKE, 7, HARLEY STREET, LONDON, W.1

NO CASE TREATED WITHOUT MEDICAL SUPERVISION.

moderate uncomplicated; (2) fulminating toxic; (3) anuric; and (4) continued and ermittent. He has a word to say on the effect of *ovement on the prognosis*. It is the general inion that the percentage of relapses is greater the cases that have been moved, but in his view larger series of cases is necessary before this is cepted as true. The point is important, not ly from the point of view of treatment, but also view of BLACKLOCK and MACDONALD's claim at muscular movement is dangerous because it oduces an excess of sarcolactic acid. Dr. ROSS tes the case of a prospector who, whilst cycling journey of 20 miles, developed blackwater fever. e completed this journey and also one by rail of 0 miles to Salisbury before reporting sick and et made an uneventful recovery. That no treatent as yet devised has especial claim to attention obvious from the depressing fact that the deathate is fairly uniform in the various parts of the orld where the disease is encountered despite the ariations in the treatment employed. Dr. ROSS ppears to favour intravenous alkaline injections nd blood transfusion, but notes that though large number of authors have published their ethods the total number of cases covered by all eports is small. If his verdict here, as elsewhere, s mainly negative, it is because he has brought a ritical spirit to his task and has cleared the ground y showing how little real evidence exists for or gainst many of the theories on blackwater fever that have been propounded.

HEALTH IN ENGLISH PRISONS

APPEARING (like many other official documents) without undue haste, the recently published annual report[1] of the Prison Commissioners deals with the year 1930. As usual it contains ample proof of the admirable health of our prison population, thanks to the simple and regular life, the plain and wholesome food, and the careful medical supervision, which is the more effective because prisoners are prompt to complain of any illness, and thus the doctor has a chance by early treatment to prevent serious developments. The medical officer of Hull prison remarks upon the rapidity with which men lose their coughs who on reception were noted as suffering from chronic bronchitis; the prison rules prohibit tobacco and thus remove one cause of irritation. The records of specific diseases include one case of small-pox: the patient had been many months in custody, no previous case was known at the prison, and the origin was untraced. Contacts were isolated unless voluntarily vaccinated, and no other case occurred. Detailed notes are given of an unusual outbreak affecting five members of the female staff of a prison, associated with the sickness and death of a recently imported green Amazon parrot. In each case there had been direct contact with the parrot, whose symptoms indicated disease communicable to human beings; no other cases occurred.

As in previous years, attention is drawn to the mistaken policy of certain courts of summary jurisdiction, where the bench sentence a prisoner to a term of imprisonment and ask that he may be kept under observation during the currency of the sentence so that the bench may be informed of his mental condition at the expiration. Magistrates should follow the practice of assizes and quarter sessions and call for medical evidence before proceeding to dispose of the case. A man's mental condition may be as relevant to the charge as any other item of evidence. Moreover, as Dr. NORWOOD EAST observes in the chapter containing the report of the Medical Commissioner, conviction and imprisonment may introduce elements which obscure the mental reactions associated with the offence. It is important that magistrates should also realise that, since the Mental Treatment Act of 1930 has encouraged the setting up of outpatient clinics for the treatment of mental disease, and has sanctioned the reception of voluntary patients in mental institutions without certification, the submission to treatment may well be made a condition in a probation order. If mental treatment is to be beneficial, it must be applied early. "If adequate provision is made generally for the mental treatment of in- and out-patients, there is reason to hope that a certain number of criminal careers may be checked." Certainly the probation officer, who too often has no experienced medical practitioner to advise him, may hope to be spared anxiety over troublesome cases of minor abnormality and temperamental instability if the facilities offered by the Mental Treatment Act are sensibly accepted. Dr. EAST points out the special advantage of voluntary treatment in a mental hospital for cases of attempted suicide. The number of persons sentenced to imprisonment for this offence is now very small. The police take proceedings only when the accused requires detention in his own interests. The community does not desire severity of sentence and an important body of medical opinion considers imprisonment illogical for persons who attempt to take their own lives. The great benefit derived by these cases from treatment at present received in prison hospitals is evidence of the value of advantages now made possible by the Act of 1930.

Dr. EAST concludes with some sensible comments on the conduct of psychiatric investigations on law-breakers. It is important, he says, to avoid any indication that undue emphasis is attached to abnormal conduct, thus suggesting morbidity to the criminally inclined and encouraging mental invalidism. "Society and the criminal are better served if the latter can be made to cultivate a sense of social responsibility."

MENTAL TREATMENT ACT, 1930.—The Board of Control has issued a list, revised up to August, 1932, of some 2800 medical practitioners who have been approved by the Board for the purpose of making recommendations under Section 1 (3) and Section 5 (3) of the Mental Treatment Act, 1930. The names are first given in alphabetical order, with qualifications and full postal address, followed by a local list of cities and towns where approved practitioners reside. Copies of the list can be obtained on application to the Board of Control at Caxton House West, Tothill-street, London, S.W.1.

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[1] H.M. Stationery Office. Cmd. 4151. 1s. 6d.

Those who examine this report in detail may not agree that all the items represent equally valuable service, but will recognise that the nation is well served by its public health organisation, and that it is being administered with keen discrimination.

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BLACKWATER FEVER

SYSTEMATIC work on blackwater fever in Southern Rhodesia was first started in 1922–23 when J. GORDON THOMSON investigated the parasitology of subtertian malaria with especial regard to the part it plays in the production of this disease. H. S. LEESON then attacked the problem from the entomological side, and now Dr. G. R. Ross presents the results of an exhaustive survey[1] extending over four strenuous years. The work was rendered intricate and arduous by virtue of the conditions under which it had to be undertaken. Amongst the rural population to which the disease is mostly confined in Southern Rhodesia the cases are comparatively few and widely scattered, so that it becomes almost impossible to secure adequate material for biochemical studies in the early stages of the cataclysm when alone information of vital importance can be secured. Certain important facts have, however, been elucidated. In the first place, as far as Southern Rhodesia is concerned, the relationship between malaria and blackwater fever may be regarded as established; it is a manifestation of infection with malignant tertian malaria. It is true that certain similar features in the epidemiology of the two diseases might be explained by the theory of a common vector. Thus the transmission of both the malaria parasite and a hypothetical blackwater fever virus by *A. gambiæ* and *A. funestus* would explain the absence of both diseases from districts from which these mosquitoes were absent, but it would not explain the infrequency of blackwater fever in the first year of residence or its development long after removal from an endemic region, nor would it explain the immunity of the native inhabitant or the frequency with which attacks of malaria precede the outbreak of blackwater. How far infection with varieties of the malaria parasite, other than malignant tertian, can predispose to the development of blackwater fever cannot be determined, at any rate, in Rhodesia. That quinine is an excitant in the production of blackwater is a popular belief firmly held in Rhodesia, and Dr. Ross is not able to disprove it. In some of the cases cited in the text the connexion seems almost impossible to escape, but considerably more evidence will have to be accumulated before any causal relation between quinine and blackwater fever can be established on a satisfactory statistical basis.

The greater incidence of blackwater fever in males is attributed to the circumstance that men engage much more freely in occupations which bring them into contact with the primitive and undeveloped conditions which appear to favou its onset. In Rhodesian-born Europeans th disease is rare until the age when they star *travelling* to sparsely populated areas. Anothe interesting fact in the epidemiology is that th curve of increase and decline follows with regularit the curve of the rainfall after an interval of thre months. Though susceptibility to blackwater feve may be increased by previous attacks, there i no indication that the disease becomes mor dangerous with each attack, indeed, in Rhodesi the mortality-rate from blackwater fever wa found by Dr. Ross to be greatest in the firs attacks. One man under his observation ha four attacks during a period of about 12 year each lasting two to three days with no untowar complication, recovery being complete. H eventually succumbed to his sixth attack, followin suppression of urine. Dr. Ross is in agreemen with previous observers in finding no justificatio for the suspicion that certain houses predispos to infection. In his view susceptibility is i inverse ratio to the extent to which the individu has been protected against malaria. He does n consider increased fragility of the erythrocyt to be a factor of ætiological importance. T mechanism of methæmoglobinæmia interests hi and he cannot accept the view of BAKER and DOD that this results from the pH value of the urin He has studied the chemistry of the blood i malignant tertian malaria as well as in ful developed hæmoglobinuria. As regards bloo sugar content no significant results were obtainabl but abnormalities in the non-protein nitrogeno constituents, especially blood-urea, supply eviden of a defect in the concentrating ability of t kidney in the early stages of the disease. Ho far this defect is dependent upon the toxic actio of hæmoglobin and how far on the disturban of function consequent upon the blocking of t renal tubules by precipitated hæmoglobin difficult to say. The indirect van den Berg reaction obtainable in malaria and blackwat fever is an indication that bilirubinæmia in bo diseases is a direct result of intravascular hæmolysi A possible explanation of hæmoglobinuria is th a renal threshold value exists for hæmoglob and that when the amount of hæmoglobin in t plasma exceeds its value the pigment appears the urine. Dr. Ross gives reasons for rejecting t ingenious sarcolactic acid hypothesis of BLACKLO and MACDONALD (1928); nor, after a searchi biochemical investigation of the urine, can confirm the theory that acidosis is a factor eith precipitating hæmolysis, or even favouring t action of some other agent.

On the clinical side Dr. Ross has not been ab to find any recognisable pre-blackwater phenomen The cases under his personal observation all aro during the attack of malignant malaria and the was nothing in the general condition of the patie or in the biochemical or serological manifestatio to demarcate such cases from others. He recognis a classification into four clinical types: (1) mi which has since been fatal to many defendants who might have escaped under the rule of compulsory silence. Be that as it may, Laurie was found guilty, though only by the bare majority of eight jurymen to seven. His trial, begun on a Friday, had been compressed into two days to avoid its lasting over the week-end, the judge not completing his summing-up till nearly 10 o'clock on the Saturday night. A petition for his reprieve represented inter alia that the evidence had been entirely circumstantial, and that there was a mere balance of medical opinion; it hinted also at insanity, a plea not mentioned at the trial. The recent sentence of death on Mrs. Maybrick at Liverpool Assizes had just been commuted, and many thought that Laurie too should have the benefit of the doubt. The Scottish Office referred the question of Laurie's mental condition to three alienists who reported him of unsound mind. His sentence was consequently commuted to penal servitude for life. In 1910 he was transferred from the convict prison at Peterhead to the criminal lunatic department of Perth prison, being officially certified as suffering from progressive dementia. In 1930 he died of paralysis.

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[1] Researches on Blackwater Fever in Southern Rhodesia. By G. R. Ross, M.B., Ch.B., Ph.D., D.P.H., Rhodesian Research Fellow, London School of Hygiene and Tropical Medicine. No. 6 of the Memoir Series of the London School of Hygiene and Tropical Medicine. London: Published for the London School of Hygiene and Tropical Medicine by John Bale, Sons and Danielsson, Ltd. 1932. Pp. 262. 10s. 6d.

The plea of insanity is not a favourite one with defending counsel in criminal trials. It prejudices their vigorous controversion of facts alleged by the prosecution. Instead of whole-heartedly protesting his client's innocence, the advocate has to say, "No one but a madman could have done these acts." Moreover, the advocate knows that a successful plea of insanity may condemn the accused to a life-time of imprisonment in a criminal lunatic asylum. Though the alienists' report upon Laurie's mental condition was never published, their apparently unanimous finding that he was of unsound mind (not necessarily, of course, criminally irresponsible) saved him from the gallows but doomed him to die in prison after 40 years' detention. Students of folklore may be interested in one curious fact. Many of Rose's belongings were produced at the trial but his boots had disappeared. The defending counsel asked questions about the condition of the soles (relevant to the theory of a slip on the rocks); the police could describe the condition of the boots but could not actually produce them. It turned out that the serjeant had told the constable to put them away, and that they were buried on the shore, deep under the pebbles below high water mark. Mr. Roughead says he is credibly informed that this somewhat irregular disposal of the boots was due to the Highland belief that the dead man's ghost would thereby be prevented from "walking" to the disturbance of the living.

DEHYDRATION IN ECLAMPSIA

THE possibility has recently been entertained in several quarters that eclampsia and the pre-eclamptic state are due to excessive secretion of the pressor-antidiuretic hormone of the pituitary. Injection of pituitrin does, of course, cause an increase in blood pressure and a diminished excretion of water, signs which are characteristic of the "pregnancy kidney." The supporters of this conception believe that the necrosis of the liver and the renal changes are due to ischæmia, and the fact that œdema often precedes albuminuria is certainly consistent with the suggestion. The convulsions of eclampsia have also been compared to those which accompany water intoxication induced by administration of water and pituitrin. Analogies of this kind, however, are not enough to raise the hypothesis above the level of mere speculation. Anselmino and Hoffman [1] have brought forward more direct evidence. They claim to have demonstrated that ultrafiltrates of eclamptic blood exert an antidiuretic effect when injected into rabbits. This is an extremely important observation, but the rabbit is a treacherous experimental animal, and further confirmation is desirable. Profs. J. O. Arnold and Temple Fay, however, have accepted the view that the toxæmias in question are essentially manifestations of water intoxication, and in a recent paper [2] they urge that the present methods of treatment should be remodelled accordingly. They condemn the custom of giving large quantities of fluid with the object of flushing out hypothetical toxins and advocate instead a régime of extreme fluid limitation. This is combined with mild purgation and, when convulsions have occurred, with lumbar puncture and the exhibition of luminal. It is their practice to measure the amount of urine excreted in the first 24 hours and thereafter to limit the fluid intake to this amount or less. The normal demands of skin, lungs, bowel, and kidneys for water are considerably in excess of this intake, and the patient must consequently draw on the waters of her tissues. The authors have marred their paper by an unwieldy discussion of theoretical considerations, only some of which are relevant to their subject. It is unfortunate that their meaning is often obscure, since the bare clinical results of the methods recommended are sufficiently striking to demand the serious attention of the obstetrician. Dehydration appears to check the development of the pre-eclamptic state, and to curtail the convulsions in established eclampsia, and is certainly worthy of more extended clinical trial.

INDUSTRIAL HEALTH

THE twelfth annual report of the Industrial Health Research Board [3] covers the work of the Board up to June 30th. It contains a valuable review of the investigations carried out since the Board was born some 13 years ago in relation to modern industrial conditions. To-day we appreciate that health is a first requisite for efficiency, and that health depends on successful adaptation to environmental changes. The mere headings under which this review is presented indicate the importance of physical and psychological surroundings to the modern industrial worker. Studies of atmospheric conditions have revolutionised ideas upon ventilation. They are revealing what are the best conditions of temperature, humidity, and air movement for comfort in buildings where men and women work, and show also that these conditions also make for productive activity, for reduction in the frequency of invalidity, and the incidence of accidents. Illumination and noise are two other factors about which much has been disclosed of immediate value to the economics of industrial output. On the other side, the human factor has been intensively investigated in its reactions and in methods of work, in order to conserve, and not waste, human energy. The effect of rhythm on muscular effort, the benefit arising from rest pauses, the fallacy of long working hours, the best pace to wheel a barrow, and the best way to load one, are only some of many problems successfully tackled. Still there remain for note the recognition of the influence of the personality of each worker, and of how it may be estimated and used to the common advantage of

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[1] Klin. Woch., August, 1931, p. 1439.

[2] Surg., Gyn., and Obst., 1932, lv., 129.

[3] London: H.M. Stationery Office. 1932. 1s.

ANNOTATIONS

CLASSIFICATION OF THE CEREBRAL GLIOMAS

Of discussions at the International Neurological Congress at Berne last autumn one of the most important was on the pathology of brain tumours, especially of the gliomas. This is the subject of two papers, by Percival Bailey and by G. Roussy and C. Oberling, in the June number of the *Archives of Neurology and Psychiatry*, which also contains a valuable review, by F. C. Grant, of the diagnosis and treatment of intracranial growths in general. The earlier classifications of gliomas suggested by Roussy and his collaborators in 1924, and by Bailey and Harvey Cushing in 1926, appeared to have little in common, and Roussy criticised Bailey's classification somewhat forcibly when it appeared. But in their later work these workers appear to have reached a large measure of agreement, and the gap which once separated them would scarcely be guessed by anyone who reads the papers now published. This is a result partly of fuller understanding by each of the other's meaning, and partly of acceptance by the French authors of several of the types suggested by Bailey. For some of these there is still a difference of nomenclature, implying a difference of view as to the nature of the tumour. Thus Bailey's medulloblastoma is called by Roussy and Oberling neurospongioma. This name, which was first suggested by Hoerner, emphasises the pluripotential character of the cells from which the tumours arise and the close relationship which many of them possess to the neuroblastomas. The oligodendrogliomas and ependymomas are accepted by the French authors, who also separate Bailey's polar spongioblastoma from other forms, but are inclined to group it with the oligodendrogliomas rather than with the tumours arising from undifferentiated astrocytes. The chief point which remains at issue is the subdivision of the astrocyte group which Bailey still separates into three different types, astrocytoma fibrillare, astrocytoma protoplasmaticum, and astroblastoma. For Roussy and Oberling these are variants of one type, for the appearances to which the names protoplasmic astrocytoma and astroblastoma have been given appear to them to result from degenerative and reactionary changes in the neoplastic astrocytes, rather than from an alteration of tumour type. In this they are supported by W. Penfield, who does not recognise the existence of the type astrocytoma protoplasmaticum, and by the appearance of astroblast-like cells in the encephalitic lesions produced by radium. It seems likely that later work will justify this point of view.

No less interesting is Bailey's confession that he regards most tumours of the glioma group as anaplastic, arising rather from adult cells by dedifferentiation than from cell-rests of incompletely differentiated cells. The nomenclature of the various forms in his classification, being based on the stages of differentiation of the astrocyte, gave the impression that he accepted the Cohnheim cell-rest hypothesis as applicable to most gliomas; and this impression was not fully corrected by his discussion on their ætiology. Roussy's most cogent criticism of the original classification was directed to this point. Now, however, this difference of opinion seems to have vanished. Both workers accept a developmental origin for certain types, such as the medullo- and neuro-epitheliomas and the medulloblastomas, and both regard the common glioblastomas and astrocytomas as anaplastic.

After some years of discussion and doubt we seem, therefore, to be near a classification of tumours of the glioma group which has international sanction. The value of this classification is emphasised in Bailey's paper, in which he stresses the importance to the surgeon of knowing what type of tumour he is dealing with—before, during, and after the operation. The six years that have elapsed since the publication of Bailey and Cushing's monograph have proved this to be largely true; but they have also shown that gliomas of the same type may vary greatly in their malignancy and rate of growth, so that metastases along the walls of the ventricles or down the spinal canal may occur in such slowly growing types as fibrous astrocytomas and oligodendrogliomas. These facts, instead of being deterrent, should stimulate us to further study of gliomatous tumours directed especially to the evidences of malignancy and the methods of spread. The papers under review provide a classification on which such research may well be based.

THE ARRAN MURDER

In the laboratory of the Department of Forensic Medicine in the University of Edinburgh there is preserved the jawbone of Edwin Rose, an Englishman who was found dead on Goat Fell in the Isle of Arran in 1889. Thereby hangs the tale of the trial of John Laurie for murder, retold in the "Notable British Trials" series with all his usual skill and enthusiasm by Mr. William Roughead,[1] who can claim to have been present at the proceedings 43 years ago. Rose made friends with Laurie on his holidays. The two climbed the mountain together, and Rose was never seen alive again. Eventually his body was found hidden under a boulder on the hillside, his head battered in, and his pockets rifled. The coat was drawn over the head, and the hiding-place had been carefully built up with stones and turf. The head injuries were terrible. The facial part of the skull was wanting; the left side of the head was smashed into fragments; the upper jaw was detached from the cheekbone. The prosecution said these injuries had been inflicted by a heavy blunt instrument, such as a large stone, the blows being struck from above downwards. It was a case of murder by a man who wanted to conceal all traces of his victim and to prevent identification. Laurie's subsequent conduct and movements were highly suspicious; he was found in possession of the dead man's clothes and other property, and he was tried on a charge of murder. Three doctors, one of whom was Littlejohn, gave their reasons for believing that the dead man's condition was not due to accident. Littlejohn, in particular, laid stress on the dislodgment of the upper jaw, and on the quite uninjured abdominal organs. On the other hand, three Edinburgh surgeons, who had not seen the body for themselves, supported the defence by attributing the injuries to a fall down the hillside. Mr. Roughead reminds us that the Criminal Evidence Act of 1898 had not been passed when Laurie was tried. Laurie was thus unable to tell his own story in the witness-box with the attendant perils of cross-examination—a risk countries had ratified, and not more than four of the non-manufacturing countries had either ratified it or acceded to it. It was contemplated that all the necessary deposits of ratification would be received by April of next year; and it would seem that some means of expediting the process will require consideration. It will be interesting to learn what report the Opium Advisory Committee has to make to the Assembly of the League on their instruction to collect information with a view to yet another conference on the limitation of the production of opium, and of the cultivation and harvesting of the coca leaf. There has also been in session a commission of pharmacological experts, appointed by the health committee, to investigate methods of standardising the morphine content in opium preparations and the cocaine content of coca leaves, whose report should prove instructive.

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[1] Trial of John Watson Laurie (the Arran Murder). Notable British Trials Series. Edited by William Roughead. Edinburgh and London: Wm. Hodge and Co. 1932. Pp. 285. 10s. 6d.

The Egyptian police, under the vigilant administration of Russell Pasha, have achieved the detection and expulsion of the organiser of an important gang of traffickers in the Levant. This case led to the discovery of a secret heroin factory in Stamboul from which it appears that in one transaction some five tons of heroin were consigned to the Egyptian trafficker for £15,000. Russell Pasha informed the conference of 1931 that the convention which they had drafted was "not the convention of direct limitation which some of us had hoped to see," and it is clear that much remains to be done to achieve the object aimed at by the first Hague opium conference of 1911–12—viz., to limit, by international coöperation, the production and distribution of dangerous narcotics to medical and scientific purposes exclusively.

ERYTHROBLASTOSIS OF THE NEW-BORN

FRESH evidence has recently been brought forward which suggests that the clinical syndromes of congenital hydrops and icterus gravis are manifestations of the same underlying pathological condition, to which the name erythroblastosis of the new-born has been given. This pathological condition consists of a continuation of, or reversion to, the embryonic level of blood formation. Large numbers of nucleated red cells occur in the circulating blood, and active hæmopoiesis is found in the liver, spleen, pancreas, kidneys, suprarenals, thymus, pituitary, and lymph glands, as well as in the bone-marrow. S. H. Clifford and A. T. Hertig, in a recent review of the literature,[1] claim that the disease is more common than is generally believed. Within nine months they have seen seven proven cases giving an incidence of 1 in 340 births. Both clinical types react well to small and frequent blood transfusions, but the prognosis is bad unless prompt measures are adopted. These include the administration of fluids and, if anæmia persists, of small doses of iron and ammonium citrate. The question of early diagnosis is of great importance, and is as much an obstetrical as a pædiatrical problem. The mother's past history may suggest that erythroblastosis has occurred in a previous pregnancy. The vernix caseosa is of a characteristic thick golden-yellow colour, which is of great diagnostic significance. The placenta is often abnormally large. The abdomen may be prominent owing to the presence of free fluid and to enlargement of the liver and spleen. Severe anæmia and œdema may be present. Such findings should lead to an immediate examination of the blood. At birth there should not be more than five nucleated red cells seen in counting 100 white cells. On the second day there should be fewer than one nucleated red cell per 100 white cells. Clifford and Hertig state, however, that an abnormally high nucleated red cell count is not pathognomonic of erythroblastosis of the new-born unless associated with other signs. The relationship of the condition to idiopathic anæmia of the new-born remains to be determined.

TOXÆMIA AND CARBOHYDRATE METABOLISM

THE clinical observation that the diabetic state is aggravated by infection is borne out by the more recent discovery that carbohydrate metabolism in the normal animal may also be impaired by the same cause. The impairment has been variously ascribed to suppression of insulin secretion, to stimulation of the suprarenal and thyroid glands, and to actual destruction of insulin by the circulating toxin. But the only factor in the carbohydrate-regulating mechanism that has been investigated at all fully either in man or in animals has, however, been the blood-sugar. B. Corkill,[1] considering that the disturbance is probably more deep-seated, has now approached the problem from the point of view of deposition of liver glycogen. It has been shown by M. W. Goldblatt[2] that in normal young rabbits small doses of insulin markedly increase the deposition of glycogen in the liver. Goldblatt regarded this as a "locking" action of insulin (preventing the conversion of liver glycogen to glucose), though Corkill, in confirming his results, suggested that it is due to the action of adrenaline secreted owing to insulin hypoglycæmia. In his present study, Corkill has investigated the deposition of glycogen in the livers of young rabbits rendered toxæmic by injection of diphtheria toxin—a substance known to cause particular damage to the suprarenal bodies. He finds that the normal effects of insulin and of adrenaline alone in causing accumulation of liver glycogen are suppressed, and also that when the two hormones are given together, in proportions which cause glycogen deposition in the liver of the normal animal, the effect is again suppressed by the toxæmia. Blood-sugar estimations indicated that toxæmia made the animals resistant to the effect of insulin, in that recovery from hypoglycæmia was abnormally rapid. This rapid recovery Corkill attributes to an excess of the normal effect of adrenaline reaction in promoting recovery from insulin hypoglycæmia—a supposition supported by the fact that ergotoxine removed the abnormally early recovery. It is significant, however, that although ergotoxine abolished the insulin resistance shown by the blood-sugar, it did not facilitate the deposition of glycogen in the liver.

THE NERVOUS SYSTEM IN PERNICIOUS ANÆMIA

THE frequency of involvement of the nervous system in pernicious anæmia has seldom been studied closely. Text-books differ in their opinions, but generally would have it believed to be relatively uncommon. R. S. Ahrens,[3] however, in a routine examination of 189 cases of proved pernicious anæmia, finds in over 97 per cent. definite signs of dysfunction of the nervous system. As an index of disturbance he has taken vibratory sensation, and he holds that this offers the earliest conclusive evidence of nervous employer and employed. Some persons are more susceptible than others to boredom; others seem to prefer monotonous processes which give them freedom for daydreams; some appear to possess an innate liability to accident which, however, is usually associated with lack of skill at the process concerned and with a tendency to periods of invalidity; others, with a charmed life, go accident-free, are skilled craftsmen, and rejoice in sound health. These variations are largely reactions to environment, the adjustment of which, where possible, means not merely success in industry, but harmony in the social community. The work of the Board is thus no mean contribution to human progress.

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[1] New England Jour. of Med., 1932, ccvii., 105.

[1] Jour. of Physiol., 1932, lxxv., 381.

[2] Biochem. Jour., 1930, xxiv., 1199.

[3] Arch. Neurol. and Psychiat., July, 1932, p. 92.

NEURAL IMPULSE AND THE PSYCHONEUROSES

CENTURIES before neurology had enlightened us with regard to the functions of the central nervous system, philosophers and experimentalists were preoccupied with the relationship of body and mind. The effort to find a locale for the soul was solved for Descartes by placing it in the pineal body. Since that time mechanism and psychology have struggled for domination, but with every advance in experimental neurology, psychology has apparently retreated. This retreat, however, indicated rather an acceptance of neurological explanations of behaviour than a sacrifice of essential vocabulary. One of the most important problems in the relationship of the body-mind problem is brought into relief in the study of the life of feeling and emotion, particularly as these are manifest in the psychoneuroses. Where the purely intellectual or cognitive functions are concerned, psychologists have been prepared to accept the cortex of the brain as the essential substratum of mental activity; but the variability and indefinite quality of emotional disturbances have made psychologists sceptical of neurological explanations. The work of Henry Head on sensations, however, has allowed for no doubt that the thalamus is concerned with the appreciation of affective tone, and with coarse sensibility as opposed to the fine adjustment or discrimination inherent in cortical functions. Mr. G. G. Campion[1] has recently attempted to define more clearly the thalamo-cortical share in the life of feeling and emotion. The thalamus is intimately concerned with the regulating and inhibiting of autonomic activity, seeing that it is the end station for sympathetic and parasympathetic communications. In this way thalamic, autonomic, and endocrine functions are brought into relation with the cortex, which is the clearing house of all those associative mechanisms concerned with cognition. The work of Pavlov has demonstrated that the conditioning of behaviour, the specifying of simple instinctual responses according to circumstances, is the work of the cerebral cortex. Psychoneuroses are an illustration of the disturbances in the affective instinctual life, disturbances which qualify the way in which the subject interprets the external world—a cortical function. We welcome this neurological attempt to explain the adjustment of the organism to the varying circumstances of life; but does it vitiate the psychological concepts of conflict and repression? Every mental discipline calls for the creation of a universe of discourse suitable to its subject matter, and it is a matter of speculation whether the defining of neural mechanisms makes the psychological world of discourse superfluous. Knowledge of the undulatory theory of light and the structure of the human visual apparatus does not make us cease to speak of "an experience of red." No neural explanation of visual experiences could blot out once and for all the language of psychology, which is after all but the language of mind as a living thing. In placing the affective life in the thalamic mechanism, we give it a local habitatio and a name, but the life of the organism resides i every cell of the body. The explanation of behaviou in neural terms defines the administrative capacit of the central nervous system, but it does no necessarily explain the whole working of the organis in its struggle to live.

X RAY EVIDENCE OF INTUSSUSCEPTION

A POSSIBLE method of establishing the diagnosi in doubtful cases of intussusception has recently bee suggested by Dr. Reginald Miller. He records[1] case of subacute intussusception, occurring in a gir aged 3, in whom the condition was demonstrate radiographically both by a barium enema and a opaque meal. The patient was taken ill wit abdominal pain and vomiting on April 10th; n blood or mucus was passed per rectum. On admissio to hospital on the 13th, she was found to have rounded tumour in the left side of the abdomen an aperient enema produced a scybalous result showin traces of blood and mucus, and immediately afte wards no tumour could be felt. The child's conditio was good for the next three days, apart from irregul attacks of colic in the region of the tumour, whi had reappeared; the bowels were opened by enem On April 16th an opaque enema was given, and radiogram taken immediately after its evacuatio showed the apex of the intussusception just belo the hepatic flexure; the barium, having becon insinuated between the intussusceptum and t intussuscipiens, outlined the folds of the mucos The child remained well, and a skiagram of an opaq meal, given two days later, showed the apex of t intussusceptum at the middle of the transverse colo It was noticeable that the intussusception in t skiagrams had travelled back from the left to t right side of the patient. On April 19th no defini tumour was palpable, but a laparotomy was perform for safety's sake; it was found that complete spo taneous reduction had occurred, the ileocæcal regi still being œdematous and the adjacent glan enlarged and soft. Dr. Miller thinks that the eviden of an opaque enema might be of considerable val in the diagnosis of doubtful and acute cases intussusception. Screening could be so quick performed that it need entail no serious waste of tin

TRAFFIC IN DANGEROUS DRUGS

THE question of further action to be taken restrict the international traffic in dangerous dru and to limit their production and distribution medical and scientific purposes will come unc review by the Council and the Assembly of t League of Nations at their September sessions. T convention of 1931, which set out to secure su limitation of production, is not yet in operatio By Article 30 it cannot come into force until ratifi or acceded to, by 25 countries, including four of t following manufacturing countries: Great Brita France, Germany, Japan, Netherlands, Switzerla Turkey, and the United States. It was stated August 1st that only one of the manufacturi

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[1] Brit. Jour. Med. Psych., 1932, xii., 1.

[1] Arch. of Disease in Children, August, 1932, p. 209.

SPECIAL ARTICLES

CEREBRO-SPINAL FEVER

A RECORD OF THIRTY-ONE CASES, WITH SPECIAL REFERENCE TO INTENSIVE SERUM TREATMENT

By E. Ashworth Underwood, B.Sc., M.B., D.P.H. Glasg.

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Cerebro-spinal fever naturally varies much in its severity. Hirsch[1] showed that the mortality in an epidemic might be as low as 20 per cent. In Glasgow during 1906–08 the mortality-rate was 74·8 per cent. in 910 cases treated in hospital.[2] During the war the mortality-rate fell considerably, but in the Glasgow epidemic of 1929 it was 83·6 per cent.[3] The present outbreak in Rotherham is interesting because of the high virulence of the disease, and also because of the prevalence of Type 3 of the meningococcus. This paper deals with the cases which occurred during the calendar year 1931.*

Incidence and mortality.—Between Jan. 1st and Dec. 31st, 69 cases were notified; 60 of these were admitted to the isolation hospital, and in 37 the diagnosis of cerebro-spinal fever was confirmed. I saw many of these cases before admission, and they were under my care after admission. For all cases, including six who died before admission, the case-mortality was: males, 77·3 per cent.; females, 95·2 per cent.; both sexes, 86·0 per cent. A noteworthy feature was the frequency with which adolescents and young adults were attacked. Only 14 per cent. of the patients were under 5 years, whereas the corresponding figure for the Glasgow epidemic of 1929 was 60·5 per cent. (Peters and Gunn [3]).

CLINICAL FEATURES

All the following sections deal with 31 confirmed cases who were under my care throughout their illness. Most cases showed a very acute, and many a fulminating, type of the disease. The following is a brief summary of the chief clinical features:—

Headache occurred as an initial symptom in 30 cases, vomiting in 22. Other common initial symptoms were: stiffness of neck, 19 cases; irritability, 18; depression, 11; pain in limbs, 2; convulsions, 2 (both children). After the onset headache usually masked other symptoms. Cutaneous hyperæsthesia occurred in 15 cases (48·4 per cent.).

Nuchal rigidity occurred in every case, and was usually definite on admission. Head retraction occurred in 10 patients (32·3 per cent.)—four of whom were children and three others thin subjects. This agrees with the incidence of 30 per cent. given by Worster-Drought and Kennedy.[4] Opisthotonos was seen in three cases only (9·7 per cent.). In one of these it appeared late, with the onset of chronic internal hydrocephalus. This rather rare sign is commonly associated with meningococcal meningitis—giving the "gun-hammer position." Osler [5] mentions that orthotonos is much more common, and this series of cases confirms him. Kernig's sign was present in 27 cases (87·1 per cent.). Brudzinski's signs were much less reliable. The contralateral reflex (identical or reciprocal) occurred in five cases only, the neck sign in 16 cases. All the cases which gave a positive contralateral reflex also gave a positive neck sign. Rigidity of the limbs occurred in 14 cases. Abdominal rigidity was rare, but slight trismus was seen in one case. The tendon reflexes were variable. An apparent bilateral extensor plantar response was seen in one case. Ankle-clonus was never observed.

Facial paralysis occurred in three fatal cases (9·7 per cent.). Paralysis of one arm was seen in two cases. Other conditions were: dysarthria, 2 cases; nerve deafness, 1; aphasia, 1; dysphagia, 1; epileptic seizures, 1. Coma supervened in 21 cases (67·7 per cent.)—or in all the cases who died except five.

Ocular manifestations.—Abnormalities of the pupils are important signs. Inequality was seen in 8 cases; a sluggish reaction in 5; and contraction in 2. One fatal case exhibited paralysis of the right pupil. Strabismus was very common: it was seen in 11 cases (35·5 per cent.); in 2 it was transient. This incidence is much higher than that found by Rolleston (10·2 per cent.)[6]; or by Worster-Drought and Kennedy (19·5 per cent.).[7] In the present series only one patient with strabismus recovered; in this instance the squint was slight. One of the 11 cases quickly developed a total ophthalmoplegia. Nystagmus did not occur in a single instance. Ptosis was not infrequent; it was seen in three cases (9·7 per cent.), one of which recovered. The incidence in Rolleston's cases was 3·6 per cent.[8] Retraction of the upper eyelid occurred in two fatal cases. Photophobia was noticed in 11 cases, but it is probable, as Ballantyne [9] has shown, that this was not a true photophobia, but was due to spasm of the eyelids. Conjunctivitis—mostly mild, but in one case purulent—occurred in 8 cases (25·8 per cent.). This is much higher than Rolleston's incidence of 5·6 per cent. Other ocular findings were: amaurosis, 2 cases; iritis, 1; conjunctival hæmorrhage, 1. A sign to which attention is not usually drawn is œdema of the eyelids, which occurred in 6 cases (19·4 per cent.). In 1 case it appeared on the left side only; in 2 other cases it affected both lower eyelids only. All the patients who showed the condition died, and none of them developed a skin rash.

Urinary symptoms.—The incidence of albuminuria (6 cases, 19·4 per cent.) was higher than usual in this country. Rolleston [8] found the condition in only 5 out of 143 cases. On the other hand, Cazamian [10] found albuminuria in all of 113 cases. Hæmaturia occurred in one case; this patient had the apoplectiform type of the disease, and she later developed a rash. She was not having hexamine. Polyuria was present in 11 cases (35·5 per cent.); retention of urine in 9 (29 per cent.); and incontinence of the bladder in 10 (32·3 per cent.). Some cases who had incontinence probably had a retention overflow.

Other symptoms.—Bronchitis was fairly marked in three cases. One patient showed pericardial friction; he recovered. Late cyanosis was noticed in 15 cases (48·4 per cent.), and three cases had Cheyne-Stokes' breathing before death. No definite case of rhinitis was noticed. Throat signs were usually those of chronic conditions, but three cases showed injection of the tonsils with dryness of the fauces. The tache cérébrale was frequently seen. Vaginal discharge (from which meningococci could not be cultured) was present late in the illness of a girl of 9 years. One patient showed definite abdominal tenderness on admission. On the seventh day of illness in a boy of 10 years definite blood was found in the stools; no abnormal abdominal signs were elicited in this case. The patient died.

Rashes.—The incidence of rashes in different epidemics is very variable. During the war they were quite common—e.g., Rolleston [8] gives 59 per cent. and Worster-Drought and Kennedy [11] 53 per cent. In the present series a rash was noticed in 10 cases (32·3 per cent.). In two other cases the presence of a rash was doubtful. The rashes were mainly petechial and macular, and the sites most commonly affected were the chest, thighs, and arms. Only one patient with a definite rash recovered.

Herpes developed in seven cases (22·6 per cent.). The incidence in Rolleston's cases was 23 per cent., and in those of Worster-Drought and Kennedy 35 per cent.

In the present series the herpes usually appeared between the fourth and the eighth days of disease. It was profuse in damage. Most often the sensation is first lost over the toes, after which it gradually disappears upwards towards the trunk, the arms being but rarely affected. Coincidently with this sensory disturbance, reflex activity may or may not be altered. Alteration from the normal plantar response was observed in only 28 cases; and this is the only definite sign that the disease process has attacked the spinal cord. Ahrens expresses the opinion, however, that vibratory disturbance is sufficient evidence to inculpate the cord—a statement which may not meet with the assent of all neurologists. In only 39 cases has he been able to study the value of liver or similar therapy; and he concludes from his observations that this method of treatment has no demonstrable effect on the vibratory disturbance and cannot be credited with causing definite alteration of the reflex activity. In this respect he is in accord with D. McAlpine,[4] but in opposition to C. C. Ungley and M. M. Suzman.[5] Opinion thus remains divided about the value of liver therapy for the correction of nervous disturbance. Attention is also drawn *by Ahrens to the presence of mental symptoms in* association with anæmia: alterations which may vary from mild personality changes to a definite organised psychosis. This aspect of the disease has been the subject of investigation in the past by H. W. Woltman, who, in an extensive paper,[6] described not only the symptoms but the histological appearances in the brain. In our last issue Dr. I. Atkin recorded such a case and described the value of liver therapy in clearing the mental picture. This is certainly a part of the disease process which has received but scant attention in the past, and the benefit or otherwise of liver therapy has not as yet been assessed.

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* The writer entered upon his present duties in January, 1932.

PHYSIOLOGISTS AT ROME

THE fourteenth International Congress of Physiology met this year in Rome from August 29th to Sept. 3rd. Earlier in the year there had been suggestions from some quarters that in view of the economic situation the congress should not be held. The decision of the Italian committee that it should be was justified by the very large membership. Nearly 1100 names appear in the printed lists, and the final numbers attending cannot have fallen far short of 1500. The opening meeting took place under the presidency of Prof. Bottazzi, when the members were welcomed by Signor Mussolini. The opening address was given by Prof. A. V. Hill, who took as his subject Energy Exchanges in Muscle and Nerve. His address was much appreciated by those fortunate enough to get in to the opening ceremony. A large number of members, however, excluded by the prompt closing of the doors at 9.55 A.M., were obliged to remain outside the Campidoglio until the meeting was over. Prof. Hill, caught in this crowd, was narrowly rescued in time for the meeting. Two other lectures were given during the congress: one by Prof. P. Karrer (Zurich), Über Carotinoide und Vitamin A, and the other, by Prof. Pavlov, entitled La physiologie de l'activité nerveuse supérieure. Prof. Pavlov, who was enthusiastically welcomed, showed himself to be full of vigour and vitality in spite of his 83 years. The programme of the congress contains the titles of some 450 papers and demonstrations, of which, naturally, only a small number could be attended by any individual member. Four sections ran concurrently with excellent mechanical devices in each theatre giving the number of the communications taking place at the time in the other sections. The communications in the sections were more or less grouped according to subject. This brought together those interested in a particular aspect of physiology, and gave occasion for some excellent discussions. Papers on respiration led to a discussion in which Yandell Henderson, Anrep, Douglas, Hering, Heymans, and others took part. This discussion was taken up again and carried further the next day, when a group of papers on circulation were given, led off by Heymans and Bouckaert, of carotid sinus fame. Heymans also had an excellent demonstration showing the close relationship between this structure and the respiratory centre. Other sections were devoted to a wide range of biochemical subjects, to many aspects of metabolism, to muscle and nerve, among the other numerous divisions in which physiological work must now be carried on. At this congress no member was allowed to read more *than one paper, but unless future meetings are to* be drowned in a sea of papers, it seems certain that there must be some further limitation. On the last day of the congress members were invited to the Vatican, where they were received and addressed by the Pope. After the congress an excursion was arranged to Naples, which gave members the opportunity of visiting the Aquarium and its laboratories, and of making excursions to Capri, Vesuvius, Pompeii, and Pesto. Generous hospitality was extended to members, and the arrangements for their convenience were admirable. At the final session it was reported that the committee had accepted an invitation to Russia for the 1935 congress.

Dr. Cecil Wall has been elected Master of th Society of Apothecaries.

Dr. W. Langdon Brown, consulting physician t St. Bartholomew's Hospital, has been appointe Regius professor of physic in the University o Cambridge, in succession to Sir Humphry Rolleston who retires on Sept. 30th on completion of his ter of office.

WE regret to announce the death on Monday last of Dr. Thomas Henry Craig Stevenson, who was from 1909 to 1931, superintendent of statistics a Somerset House. Dr. Stevenson's work as a medica statistician gained recognition, not only in thi country, but throughout the world. He was in hi sixty-third year.

Dr. Ian Macdonald, who died of pneumonia i London on Sept. 14th, in his 59th year, was a medica graduate both of Edinburgh and Paris, and had winter practice for many years in the Spanis province of Huelva.

NORTH MANCHESTER DISTRICT NURSES' HOME.—A maternity wing has been added to this home a Harpurhey at a cost of £11,000, and was formally opene by Lady Maureen Stanley. It is a one-storeyed buildin capable of extension; at present it contains a ten-bed ward three private wards, and an antenatal ward lighted wit vita-glass, as well as a dispensary and other offices The maternity wing is intended to be practically self supporting.

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[4] THE LANCET, 1929, ii., 643.

[5] Brain, 1929, lii., 271.

[6] Arch of Int. Med., 1918, xxi., 791.

recrudescences, during which serum was also given intravenously, but he recovered after a long illness. In other cases serum was also given intracisternally, but it was evident that this route did not allow of much increase in the amount. Hence, later in the epidemic the intravenous route was adopted as an additional method, and large doses of serum were often given in this way in each case. The method had been employed by Herrick[18] during the war with encouraging results. It has been recently recommended by Banks,[19] whose experience with it is derived mainly from sporadic cases. Later in the outbreak I adopted the following procedure:—

1. Every case showing clinical evidence of cerebro-spinal fever was lumbar punctured on admission. If the fluid showed abnormal naked-eye features, and the pressure was increased, a considerable amount was withdrawn. A dose of serum was then given intravenously—usually 100 to 200 c.cm.

2. The fluid was examined for cells and organisms (microscopically). If the diagnosis was confirmed, lumbar puncture was forthwith repeated: 20 to 40 c.cm. of serum was given intrathecally. Further detailed examination of the cerebro-spinal fluid was commenced.

3. Lumbar puncture was repeated at intervals of 12 to 24 hours. Further doses of serum were given intrathecally, usually at intervals of 24 hours. After a few days the question of further intrathecal injection was determined by the amount and character of the fluid withdrawn.

4. In any event daily attempts at intravenous injection were made (100 to 200 c.cm.). Usually, and especially in children, the number of intravenous injections was strictly limited by the tendency of the veins to collapse, a feature which was very marked in this outbreak. In young children, in whom a single successful intravenous injection was often all that could be accomplished, further large doses of serum were given by the intramuscular and, in a few cases, by the intraperitoneal route.

Acute respiratory failure was encountered in several patients during the administration of serum intrathecally, and prolonged artificial respiration had sometimes to be employed. The tendency is well recognised, and is probably caused by anæmia of the respiratory centre due to a fall of blood pressure. This rapid fall of blood pressure is a very frequent consequence of the intrathecal injection of serum. The condition has been specially studied by Sophian.[20]

Fulminating cases due to type 3 organism continued to be admitted. With the serum used, the results of the intravenous injection of large doses were not nearly so good as was found by Herrick and by Banks. Of 11 patients admitted in an acutely ill condition who were given large doses of serum intravenously in addition to serum intrathecally, only three recovered. This gives a death-rate of 73 per cent. for these cases. Nevertheless, it seems to me that failure was due rather to the absence of appropriate antibodies in the serum than to the method used. The largest amount of serum given in any one case was 1110 c.cm.

Subarachnoid lavage with normal saline has been frequently recommended, recently by Whittingham, Kilpatrick, and Griffiths.[21] This method was used intensively in the last two cases, both children, in the present series; both died. When we have to deal with organisms of such virulence the selection of an effective method of treatment is difficult. The method of subarachnoid lavage is worthy of more extensive use. The main objection to it is that it requires much time for its proper performance. It seems that, given a more potent variety of serum, it might be of much assistance in preventing the passage of a case into the post-acute stage with the formation of adhesions. In one case in this series mercurochrome in isotonic glucose was given intravenously on two occasions (15 c.cm. at each injection). It did not appear to be of any value.

Serum phenomena.—A serum rash occurred in eight cases (25·8 per cent.), of which four recovered. In one case it was erythematous and accompanied by joint pains: in the others it was urticarial. Phenomena of anaphylaxis were never seen. Desensitisation was performed if the previous administration of horse-serum was suspected.

MORTALITY AND SEQUELÆ

Of these 31 cases, 12 died within 48 hours of admission. Of the remaining 19 cases, 6 recovered. This gives a death-rate of 68·4 per cent. Many of the 12 cases excluded died within 24 hours after admission. The 6 recovered cases have all been recently examined: 2 have had no complaints, and in these clinical examination was negative. The following is a summary of the condition in the other 4 cases:—

CASE A.—Male, 20 years. Symptoms and signs marked but evanescent; discharged as "forme fruste." Fainted a week after discharge and was unconscious for 24 hours. Headache persisted for two weeks. Clinical examination negative.

CASE B.—Male, 10 years. Symptoms mild. After discharge had an illness which was described as of "rheumatic" type. He still has headache (vertical).

CASE C.—Male, 27 years. Typical acute case. Functional paraplegia and deafness in left ear during convalescence. Nine months later, still nervous with occasional giddiness. Hearing almost absent in left ear. Rinne ÷ ÷. Cremasteric reflexes absent. Extensor muscles of left wrist weak.

CASE D.—Male, 30 years. Acutely ill, with two recrudescences. Received in all 1110 c.cm. of serum. Five months later: still having headaches: deafness in left ear, and numbness in thighs. Stated definitely that he had had aspermatorrhœa since his illness. Gait slightly ataxic; weakness of all leg muscles, and some arm muscles. Cutaneous responses modified in both legs. Right knee-jerk practically absent. Cremasteric reflexes absent. Rinne ÷ ÷ in left ear.

THE RÔLE OF INJURY

Cases in which it can be shown that injury definitely caused the onset of cerebro-spinal fever are rare. Richey and Helmbold[22] published a case in 1923 and reviewed the literature. In 1929 Lode and Schmuttermayer[23] described a case and quoted Korbsch, who, in 1923, could find only 14 authenticated cases recorded. It appears from published cases that, when the onset has been due to injury, there has either been a fracture of the base of the skull or else the symptoms of meningitis have developed within two days; in any case the onset has rarely been later than the fourteenth day.

From the medico-legal aspect the following case is of some interest:—

The patient, a powerfully built miner, aged 52 years, was admitted to hospital on July 21st, 1931. The history was that he had sustained a head injury in the pit on June 4th, 1931. The injury was apparently a scalp wound, and no evidence of fracture had been found. On June 24th he was "signed off" insurance as fit for work. Meningeal symptoms developed on July 19th. His condition was very serious on admission. He became rapidly worse and died on July 24th. After death the relatives alleged that the accident had been the cause of the onset of the cerebro-spinal fever. The coroner ordered a post-mortem examination, which was performed by Dr. J. Crook. Thick pus was found in the ventricles, at the base of the brain, and in the spinal theca; the cranium was shown to have been unaffected by the scalp wound, and there was no evidence of fracture of the skull. The court found that the injury had played no part in determining the onset of the meningitis.

Claude Ker rightly pointed out that during an epidemic of cerebro-spinal fever the tendency is to attribute all head symptoms to minor injuries and, in the case of children especially, it is easy to elicit a history of a recent fall.

A factor which may possibly be of some ætiological importance, and to which attention does not seem to have been drawn previously, is a history of a recent only one case. Two of the 7 cases recovered. Herpes existed together with a typical rash in 4 cases; with a serum rash in 5; with both a specific rash and a serum rash in 3. Of the 7 cases 3 were children, aged 3, 5, and 9 years respectively. This incidence may be compared with that in Robertson's series,[12] where it was never present in 66 patients under 16 years of age; and with that in the series of Collette,[13] where it was found in 15 cases in a series of 48 children.

Temperature and pulse.—Eight cases showed a temperature of over 103° F. immediately before death; in one of these it was 106·6°. In children the pulse-rate was sometimes over 160 before death.

Complications.—Since the death-rate early in the disease was high, complications were few. Pain in the joints occurred in 4 cases (12·9 per cent.), but a typical acute arthritis was not seen. Internal hydrocephalus was marked in one case and slight in two others (one of whom survived). Orchitis or epididymitis was not observed in a single case. The survivors have recently been questioned about this complication, but none has any recollection of pain or swelling in the testicles.

THE CEREBRO-SPINAL FLUID

An increase of tension is a very suspicious feature. In every case, except one, the fluid was under considerable pressure at the initial lumbar puncture. The fluid from practically every case showed a typical clot on standing. In one instance fluid which had previously been very turbid was straw-coloured, and coagulated into a solid mass very rapidly. This was probably an example of Froin's syndrome, which is explained by Hanes [14] as due to an escape of blood plasma into cerebro-spinal fluid contained in a cul-de-sac of the meninges. The patient died.

Xanthochromia.—Under this heading may be included: (*a*) Froin's syndrome; (*b*) erythrochromia—a yellow coloration, due to admixture of the fluid with the altered hæmoglobin set free by previous trauma during lumbar puncture; (*c*) true xanthochromia—found in cases with intrathecal adhesions causing obstruction to the passage of fluids; subsequent lumbar puncture draws off fluid tinged yellow by serum (Chiray [15]). In the present series xanthochromia of some type was noticed 13 times in 7 cases. All these patients except one died. Of these seven cases, one had Froin's syndrome, two probably had erythrochromia, since traces of blood had previously been present in the fluids; and three probably had the true xanthochromia of Chiray.[15] The remaining case showed yellow coloration of the fluid at the initial lumbar puncture; the colour was probably due to admixture with pus, since the fluid later became markedly purulent.

Cellular content.—Initially the total cell count per c.mm. varied between 720 and 31,000. Polymorphs varied between 70 and 97 per cent. (usually slightly over 90 per cent.). It is well known that the differential count varies with the progress of the disease.

Chemical reactions.—Globulin was always in excess. The percentage of albumin varied from 0·05 to 2·4, but was generally between 0·2 and 1. The normal chloride content of the cerebro-spinal fluid is 0·73 per cent. (Linder and Carmichael [16]). In this series the average chloride content was 0·68 per cent. Most readings approximated closely to this, but readings of 0·72 and even 0·78 were also found. The diagnostic value of the chloride content is therefore very doubtful. One case showed partial reduction of Fehling's solution; in all others glucose was absent. The colloidal gold reaction gave a meningitic response in each of three cases examined.

Stained preparations of centrifugalised deposit were examined in every case—often repeatedly. The specific organism was seen in every case except three, and in one of these the meningococcus was isolated in pure culture. The other two cases were of the "forme fruste" type; they cleared up rapidly, but both showed sequelæ, to be described later. In the earlier part of the epidemic diplococci were usually extracellular and scanty; towards the end intracellular forms predominated. The meningococcus was isolated in pure culture in 15 cases—or in 83 per cent. of the cases examined by this method. Much of the chemical and cultural work on the fluids was performed at the bacteriological laboratory of Sheffield University.

SEROLOGICAL TYPES

Cultures were forwarded to Dr. W. M. Scott at the Pathological Laboratory of the Ministry of Health, and in 12 instances the organism was successfully typed. I am very much indebted to Dr. Scott for the *following information*:—

Of the 12 cases, in five the organisms were identified as being of type 3; four as of mixed type 1 and 3; one as of type 1; and in one case the organism was classified as allied to types 1 and 3, but further differentiation was not carried out. The remaining case—a baby of 18 months—showed an organism which was placed in a group including types 2 and 4, and probably other types and "individual" strains. (All the types referred to are Gordon's.)

DIFFERENTIAL DIAGNOSIS

The final diagnosis in 13 cases admitted under th writer's care with a provisional diagnosis of "cerebro spinal fever" was as follows:—

Influenzal pneumonia, 3; broncho-pneumonia, 2; loba pneumonia, 1; broncho-pneumonia with pleural effusion, 1 pneumococcal septicæmia, 1; pneumococcal meningitis, 1 acute tetanus, 1; acute purulent meningitis (otogenic), 1 meningismus (? intestinal), 1; meningismus (unknow origin), 1.

TREATMENT

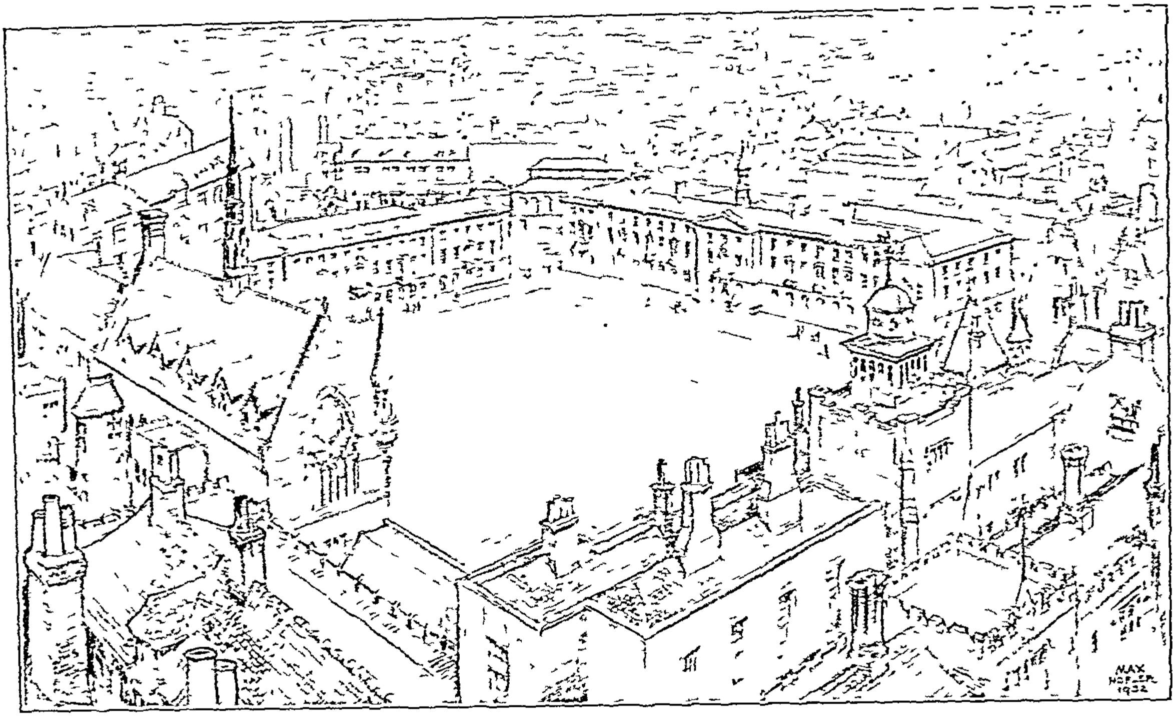
Treatment in accepted cases consisted mainly i repeated withdrawal of cerebro-spinal fluid, togethe with the administration of antimeningococcal serun by the intrathecal, intravenous, intramuscular, o intraperitoneal routes. Except in the last two cases i the series, a polyvalent serum of British manufactur was used throughout.

Lumbar puncture.—The average amount of flui withdrawn by this route was: per puncture, 38 c.cm. per case, 174 c.cm. The greatest amount of flui withdrawn in any one case was 1061 c.cm. Th operation was usually performed under gener anæsthesia, thus increasing the flow of fluid an preventing restlessness during the injection.

The point mentioned by Ker [17] should be stressed—vi the advis [illegible] uccessive lumbar punctur with the [illegible] on the right side and on t left side, [illegible] ge from the ventricle whic is uppermost. This applies especially when the flu from a patient who is obviously ill does not show any pu On several occasions I have turned a child patient whi the trocar was still in the back; this usually resulted in t appearance of a thin stream of pus in the fluid.

Cisternal puncture was carried out on 26 occasions on 22 a good flow was established. The greate amount of fluid withdrawn at any one puncture w 65 c.cm. and the average amount per puncture w 23 c.cm. Serum was given by this route on seve occasions; the usual amount was 20 c.cm., provide that a sufficient excess of fluid had been withdrawn- e.g., 10 to 30 c.cm. General anæsthesia was alwa employed. Cisternal puncture is of considerab importance in diagnosis and treatment. It especially indicated in cases where adhesions in t spinal theca have prevented the withdrawal of flu by lumbar puncture. Serum injected by this rou has ready access to the brain.

Administration of serum.—The earlier cases in t series were treated in the orthodox manner by intr thecal injections of serum every 12 or 24 hours, alo with intramuscular or a single intravenous injectio The dose of serum given intrathecally was usual between 25 and 40 c.cm. Since type sera were n available, early experience suggested that great success might be obtained by increasing the dose the polyvalent serum. Hence, in one case great amounts of cerebro-spinal fluid—e.g., 90 c.cm.—we withdrawn, and amounts of serum up to 80 c.c were given intrathecally. This patient had t



The new medical school as it will appear when completed on the site of Merchant Taylors' School.

Britain, adjoining and belonging to the hospital, and plans were prepared showing that the available area would suffice for the purpose, although the buildings would be cramped and the site not permit of expansion for future needs. The governors of the hospital then suggested the investigation of another site, shortly to become vacant, at Charterhouse, five minutes' walk from the hospital.

The Hospital of the Charterhouse, founded by Thomas Sutton in the reign of James I. after dissolution of the Carthusian Monastery, has been the home of two great public schools. Charterhouse School, where Astley Cooper was brought up, moved out to Godalming in 1872, and three years later Merchant Taylors' School (which had the surgeon Henry Cline among its pupils) moved in from Suffolk-lane, paying, it is said, £90,000 for its new quarters. That school in its turn is now to find wider spaces at Sandy Lodge, near Rickmansworth. The buildings thus left vacant nearly surround the famous quadrangle and form a close on which only the pensioners look out. One of these poor brethren, it may be recalled, was Stephen Gray, who was awarded the Copley medal by the Royal Society for his electrical researches. These historic buildings, with certain alterations, would be available at once to house the departments of chemistry, physics, biology, physiology, and possibly pharmacology, the anatomy department alone requiring a new home. There are suitable refectories and kitchens, and ample room on which a residential college could be built, leaving sufficient space for tennis courts.

The short distance which separates the site from the hospital is regarded as of little consequence compared with the amenities which it provides, both for present needs and for development in the future, and it has been decided by the council of the college that every effort should be made to acquire the Merchant Taylors' School site. A sum of about £200,000 is required to complete the scheme, and as the only available asset is the building which *now houses the physiological department* most of this money must be subscribed. The University of London, of which the college is a constituent institution, is not in a position to make a grant in aid. No public appeal is being issued, but it is hoped that large donations will come in from public-spirited people who appreciate the importance of the training of medical students. Many members of the staff of the college have contributed generously. The matter is urgent. The Merchant Taylors' School site becomes vacant at the end of the year, and an option on it has been obtained until the middle of October.

MEDICINE AND THE LAW

A Coroner on Consent

A CORONER is entirely within his rights in letting it be known that in all cases where death occurs under an anæsthetic he will have a very careful inquiry. The law authorises this *official vigilance*, and the public expects it. When, therefore, at a recent inquest at St. Helens, Lancashire, the coroner announced that he had made up his mind to this general course, the statement was declaratory of existing practice rather than revolutionary. The occasion was an inquest upon the death of a man who, on the advice of his medical attendant, had entered the St. Helens Hospital on August 25th, suffering from cancer of the large bowel. Four days later his condition was complicated by acute obstruction of the bowel. During his night round on the 29th the house surgeon decided that immediate operation was necessary. He called the patient's own doctor; after a joint examination the operation was undertaken, the house surgeon administering the anæsthetic, and the patient's doctor performing the operation. The patient collapsed seven minutes after the head or aural operation. One case in this series gave a history of an operation on the ear two weeks before the onset of meningitis. There was no evidence of mastoiditis on admission. Meningococci were grown from the fluid. The patient died. Perhaps, as McKenzie[24] has pointed out, the organisms may pass from the pharynx to the middle ear via the Eustachian tube. It seems possible that an aural operation may determine the onset of meningitis.

GENERAL REMARKS

This record shows how extremely virulent cerebrospinal fever may be when it becomes epidemic in a community. The great drawback to treatment during this outbreak was the impossibility of obtaining a potent antiserum, due, of course, to the fact that the sera used for some months after the start of an epidemic must be prepared from inter-epidemic strains, which often differ markedly from those actually prevalent during the epidemic. It is well recognised that most epidemics have been due to types 1 and 2 of the meningococcus, and this knowledge has perhaps given a false idea of security. In the present outbreak over 75 per cent. of the cases investigated showed organisms of type 3 or of mixed type 1 and 3; this is a very probable explanation of the high case-mortality rate in the present series. Nevertheless, it must be emphasised that an outbreak such as that described is more or less exceptional nowadays. Serum treatment has been proved in the past to be a most efficacious remedy for what is otherwise a very deadly disease, and to withhold serum in adequate doses must always be a risky procedure.

I have to thank Dr. J. S. Anderson, Dr. William Barr, and Dr. E. L. Sturdee, of the Ministry of Health, for much valuable criticism. I have also to thank Miss C. Barraclough and Miss E. Wilkinson for assistance in the tabulation of data.

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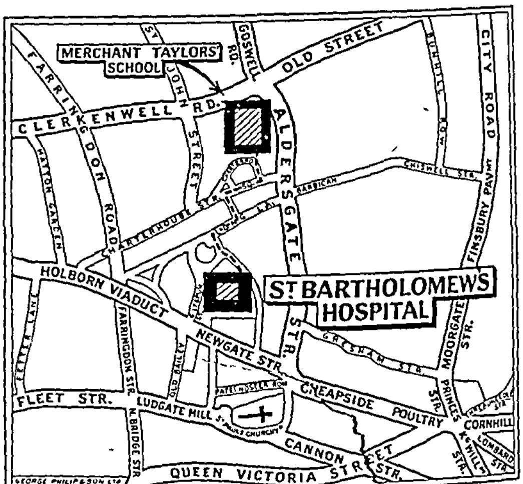
BELFAST MENTAL HOSPITAL.—The report of the medical superintendent of this hospital for 1931 states that whereas, on the basis of official requirements, there was accommodation for 976 patients, the number actually in residence on Dec. 31st was 1390, an excess of 42 per cent. A scheme for the provision of additional accommodation is under consideration.

THE MEDICAL COLLEGE OF ST. BARTHOLOMEW'S HOSPITAL

PROPOSED EXPANSION ON A HISTORIC SITE

St. Bartholomew's Hospital Medical College, founded by John Abernethy and his colleagues about the year 1830, and for long incorporated with the hospital, obtained its own charter in 1921, and became to that extent a separate institution. It is obviously essential for the training of the students, who at present number about 800, that the hospital and college should remain in the closest coöperation for the purpose of clinical studies, and it is agreed that the pathological museum, the library, and the clinical lecture theatres should remain on the hospital site. But the proper housing of other departments of the college in the limited space available in Smithfield has caused anxious thought. The departments for the teaching of pre-clinical subjects could, indeed, be moved elsewhere with advantage both to the hospital and the college. The requirements of the hospital have already displaced the residential college, of which James Paget was the first warden, the room temporarily used by the nursing staff duri rebuilding of the hospital. This rebuildin in the year 1905 with the erection of out-patient department. This was followed in ing years by the erection of a pathological b nurses' home, and a surgical block, provided operation theatres and capable of dealing wit treatment of 250 patients, opened in 1931. governors of the hospital have been cons a lay-out plan for the completion of the rebu in the light of modern requirements, and it become clear that any future buildings for dep ments required for the treatment of pat must further displace buildings hitherto occupie the medical college.



Five minutes' walk from hospital to school through Charterhouse-square.

Two years ago the council of the medical col resolved to house on one site the whole of the p clinical departments, including chemistry, physi biology, anatomy, physiology, and pharmacolog and to build on it a new residential college for studen with adequate provision for recreation. It was first thought desirable to investigate a site in Lit danger of allowing a full cylinder of any compressed gas to pass into inexperienced hands is one which scarcely requires emphasis.

Unregistered Dentist Fined

The substantial fine of £100 (with the alternative of three months' imprisonment in default) was inflicted at Hull last week on a dental mechanic for practising dentistry without being a registered dentist. It was stated that he had been fined on three previous occasions for similar offences. A woman for whom the accused had made an extraction said that she afterwards suffered severe pain; she had since been obliged to attend a qualified dentist for removal of broken pieces of tooth left in her gums. If any members of the public still believe that any unregistered practitioner must have some special skill, they may note that the stipendiary magistrate, in refusing an application for time in which to pay the fine, told the defendant that he was a danger, and should be locked up as long as possible.

A Warning

The Secretary of the Royal Medical Benevolent Fund informs us that a man called at the office of the fund last month who gave his name as Dr. John Alexander Thomson, and stated that he had qualified in 1920. He said that he had been suffering from tuberculosis and had been in Switzerland for treatment for two years, that he had recently been in St. Leonard's Hospital, Shoreditch, and that he was now anxious to go to Liverpool, where he had been offered a post as ship's surgeon for short sea trips on the Cunard Line. Reference to the Medical Register shows that Dr. John Alexander Thomson's name was included from 1920 to 1931, but is omitted in 1932. Inquiry has established the fact that Dr. John Alexander Thomson died at Huddersfield on July 16th, 1931. It would thus appear that an impostor is using the name of a former registered medical practitioner.

THE PUBLIC HEALTH

ANNUAL REPORT OF THE CHIEF MEDICAL OFFICER OF THE MINISTRY OF HEALTH

Sir George Newman's annual report for 1931[1] shows that the falling birth-rate and death-rate have just about cancelled each other out, the population of Great Britain in April, 1931, being 44,790,485. The two principal forms of death, as in previous years, were diseases of the heart (206 per thousand deaths) and cancer (121 per thousand). These are followed by diseases of the nervous system and sense organs (82 per thousand) and tuberculosis of the respiratory system (60 per thousand). Between the ages of 16 and 65 the corresponding figures of these four groups are: 167, 155, 77, and 141. Attention is drawn to the high proportion of deaths from violence and lack of care among illegitimate children (6266 per million) compared with the legitimate (78 per million). There has been an astonishing saving of life during the first 12 months, particularly in deaths from bronchitis, pneumonia, diarrhœa, and enteritis. This is ascribed in large part to increased maternal care, brought about through education of the mother. An important cause of avoidable death is road accidents, the toll of which now stands among the first eight factors of mortality, having risen from 7 to 16 per 100,000 of population within a decade. Suicide constitutes another group of avoidable deaths which has increased since 1920. The suicide-rate increases with age and, if allowance is made for the ageing of the population, it is actually lower than before the war for men though not for women. The statistics show the increasing popularity of coal gas as an agent of self-destruction. There is no evidence that the gloomy months of the year drive people to take their lives; the maximum incidence was found in March, April, and June, and the minimum in November, December, and February.

England and Wales lost during the year a total of 26½ million weeks' work among the insured population from sickness and disability for which benefit was payable.

THE MOTHER AND CHILD

In 1931 2601 deaths were directly due to child-bearing. The puerperal death-rate was 4·11 per thousand live births, the lowest recorded since 1927; the rate for puerperal sepsis was 1·92, and here also a slight decrease is noted. The chief medical officer surveys the recent reports on maternal mortality from the general and regional standpoints.

Under the Local Government Act, 1929, the responsibility of administering Part I. of the Children Act, 1908, was transferred from the poor-law authorities to county and county borough councils and to autonomous maternity and child welfare authorities. These departments had not usually had previous experience of this work, which has sometimes been overlooked and neglected. In most areas the health visitor has been appointed infant life protection visitor, so that all children under the age of 7 are supervised by a trained officer. It is desirable that the health visitor should have special teaching in the supervision of a nurse child, for the work involves ascertainment as well as report on the suitability of the home and the health of the child. An appeal is made to voluntary organisations to find suitable homes.

After the second year of life morbidity replaces mortality as the chief health problem. Despite the increasing use of infant welfare centres, a large proportion of children are still found to be suffering from defects and ailments at the first school medical examination. Mothers have been taught far more about the care of the infant than of the toddler, and there has been little reliable systematic observation of the development of the pre-school child. Arrangements for home visiting are rarely adequate to cope with problems arising during the difficult period of adjustment between infancy and childhood. Provision should be made for both mental and physical care during this period.

At the end of 1931 2680 nurses were engaged in health visiting work. There were some 1000 ante natal centres provided by local authorities and some 200 voluntary clinics; postnatal and gynæcological clinics were insufficient in number. Some 1900 infant welfare centres are under local authorities and over 800 under voluntary bodies; a number of new buildings have been erected for their accommodation, often providing room for the school medical service in addition. Twenty-one day nurseries are provided by local authorities and four times this number by voluntary bodies. Convalescent treatment is available for expectant and nursing mothers and small children in 32 voluntary and 17 municipal homes, while 128 voluntary homes and 5 provided by local authorities take in mothers and babies.

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[1] H.M. Stationery Office. 1932. Pp. 259. 4s.

anæsthetic was administered, and, in spite of all possible efforts to revive him, he died of heart failure. Fortunately the coroner was able to decide that the doctors acted wisely and well, that the anæsthetic was correctly administered, and that all concerned did everything possible. The word "fortunately" is used because it appears that the medical profession does not enter this coroner's court without a stain upon its character. "I know of a case," he is reported to have remarked during the inquest, "where a woman was suffering from appendicitis symptoms. The symptoms were so acute that it was deemed necessary that there should be an immediate operation. The woman was sent to a certain institution where an operation for appendicitis was performed. It was found that the appendix was as sound as I hope mine is. They made an incision to see if there was any abdominal trouble, and there was none. The woman had pneumonia, and died from pneumonia. The only way they saved their skins was that the police surgeon said that the pains from pneumonia were somewhat similar to those of appendicitis." In so far as this anecdote might convey the fixed opinion that members of the medical profession are more anxious to save their own skins than their patients' lives, the result of the inquest was fortunate indeed.

At an earlier stage of the proceedings the coroner had pressed witnesses with questions whether consent had been given to the operation. The widow in particular was more than once asked whether her consent had been invited. All the poor woman could answer was: "They never asked for my consent; I never said 'Don't do it'; I thought it would save him." She said she was satisfied that the doctors had done their best; her husband had been in terrible pain. The circumstances of the case might have been thought sufficient to justify the application of the legal maxim that all things are deemed to have been done in proper form unless there is any element which suggests the contrary. The coroner, however, continued to press his point. The house surgeon, who had given evidence that the dead man's own medical attendant (presumably in close touch with the patient and his family) had concluded that the operation was necessary. "You don't know," he was asked, "whether the man's condition was explained to him or whether he gave consent?" His answer was in the negative, and when the coroner further asked, "Who can satisfy me that this man consented to the operation?" it is reported that there was no reply. Thereupon the coroner is reported to have said: "I want you and all medical practitioners to realise what you ought to do. You should explain to the patient that you are of the honest opinion that an operation is the only thing that can save his or her life. You should explain the whole thing from beginning to end, and you should say to the patient, 'Do you consent to the operation being performed?' If I was a medical man, I would get the patient to sign an assent, or if he was in such agony or so abnormal so far as his brain was concerned, I would get someone on his behalf to do it. Then you ought to say: 'You are going to have this operation performed; it is necessary to have an anæsthetic administered; are you satisfied that it should be administered?' It seems to me very clear what medical men ought to do."

In the face of these observations it may be useful to make the comment that, although technically any surgical operation is an assault unless performed with consent, no jury would hesitate to infer consent where a patient has placed himself in the hands of his medical attendant, has entered a hospital for the purpose of such remedy or cure as modern medical science affords, and has undergone an urgent operation to save life without any suggestion of objection from the patient himself or from his relatives. Every doctor knows the duty of explaining the nature and possible consequences of the treatment recommended; advice to this effect is given in "The Conduct of Medical Practice." But the medical profession need not take too seriously the vision of extreme precautionary formalities, the written agreements engrossed, stamped, attested, or otherwise, and the solemn procession of attendant lawyers and notaries public.

Milk Prosecution: the Freezing Test

A farmer was prosecuted at Taunton on Sept. 3rd for having on May 23rd last sold milk containing 8 per cent. of added water, to the prejudice of the purchaser. A witness for the defence said that the freezing test which had been applied to the milk sample, on which the prosecution apparently relied for proof of adulteration, had been found to vary considerably. He had tested milk from cows on the same farm in August, and had found the freezing point to be below the percentage average given by the prosecution. The witness said there was no positive test for detecting added water in milk. On behalf of the farmer it was contended that the prosecution should not have been proceeded with when the Government chemist's certificate stated that the results of his analysis did not form evidence of the presence of added water. The summons was dismissed with costs against the prosecution.

Exposure of Infectious Patient

A Cheshire miner suffering from diphtheria was taken to a sanatorium. He was later found at home in the company of his wife and sister; he refused to go back to hospital, and was consequently isolated at home. Two days later he went back to the hospital, but after a few days he ran away once more. The law provides a penalty for persons who, suffering from a dangerous and infectious disorder, expose themselves in public without proper protection. Under this provision the man has been fined 20*s.* on each of two summonses alleging unlawful exposure on two dates in June. The folly and the risks of such conduct form a lesson which might well be taught in all schools.

Gas Cylinder Explosion

An inquest was lately held at Farnborough, Kent, upon the death of a contractor's carman who died after injuries received from the explosion of a gas cylinder. The deceased was in charge of a dust-cart and, while collecting house refuse in the course of his duties, was asked by a doctor's wife to clear away a few cylinders which had been lying about for a long time. A few minutes later a fellow-workman heard an explosion and, returning to the cart, found the man on the ground with an empty cylinder near him. The sanitary inspector of the local authority said the dustmen had strict instructions as to things they should not handle. Had he himself been present, he would have refused to allow the man to take the cylinders away. He believed the deceased meant to take the brass caps off the cylinders as there was a ready market for brass; he understood that a dealer called at the dustmen's homes every week. The jury returned a verdict of death by misadventure. The

THE MEDICAL REGISTER:

UNTRACEABLE PRACTITIONERS IN 1932

WE are asked by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. Anyone, wherever resident, who finds his or her name included in this list should communicate immediately with the Registrar, 44, Hallam-street, Portland-place, London, W. 1, otherwise the name will be omitted from the next issue of the Medical Register. There may be some who have replied while this list was in the press. The date given is that of registration; the qualification is the principal one registered. The letters (E), (S), and (I) denote registration at the English, Scottish, or Irish branches respectively; (Col) and (For) denote registration in the Colonial and Foreign Lists of the Register. Those marked (S) should communicate direct with the Registrar of the Scottish Branch Council, 12, Queen-street, Edinburgh.

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Foy, George M., F.R.C.S., 1875(I).
Freedman, Ivan J., M.B., 1927(E).
French, Louis A. W., M.R.C.S., 1897(E).
Freyer, Patrick W., M.B., 1907(S).
Friedlander, Arthur J., M.R.C.S., 1909(E).
Fristedt, Elsa C. A., M.R.C.S., 1926(E).
Fryer, John, M.R.C.S., 1872(E).
Fullam, William F., L.R.C.S., 1885(I).
Fulton, Jane D., M.B., 1925(I).

Gairdner, John, M.R.C.S., 1876(E).
Galbraith, Dorothy E., M.R.C.S., 1924(E).
Game, Leonard, M.R.C.S., 1910(E)
Gane, Noel G. C., M.R.C.S., 1923(E).
Gannon, Diego, L.R.C.P., 1884(E).
Garretson, Wendell T., L.R.C.P. & S., 1917(E).
Gatenby, George, M.B., 1898(E).
Gayton, Francis C., M.D., 1878(E).
Gibson, Sydney H., M.R.C.S., 1904(E).
Girgis, Eskander, M.B., 1923(E).
Girgis, Ibrahim, M.B., 1920(E).
Girgis, Kamel, L.M.S.S.A., 1929(E).
Girgis, Riad, M.B., 1926(E).
Gladish, Albert D., M.R.C.S., 1923(E).
Glanville, William M. G., B.M., 1901(E).
Glover, Agnes, M.B., 1928(I).
Glynn, Eric H., M.R.C.S., 1925(E).
Glynn, John J., L.R.C.P. & S., 1913(I).
Goggin, Mary F., M.B., 1925(I).
Gordon, Coral O., M.B., 1919(S).
Gordon, Jack M., M.B., 1924(I).
Gould, Charles H., M.B., 1913(E).
Graham, Samuel, L.R.C.P., 1883(I).
Gravelle, Arthur E., M.R.C.S., 1915(E).
Gray, David W. J., M.B., 1919(I).
Gray, Dorothy E., M.B., 1923(E).
Gray, Hector M., M.B., 1928(S).
Gray, Herbert E., M.R.C.S., 1898(E).
Gray, John, F.R.C.S., 1925(E).
Green, Cyril A. H., M.R.C.S., 1924(E).
Gregg, Francis B., L.A.H., 1876(I).
Griffin, Blanche G. C., M.B., 1911(I).
Griffith, James de B., M.B., 1874(I).
Griffiths, John, M.R.C.S., 1888(E).
Grobler, Paul J., M.B., 1923(I).
Grove, Frederick P., M.R.C.S., 1901(E).
Guilfoyle, Francis P., M.R.C.S., 1926(E).
Gunne, John R., M.R.C.S., 1906(E).
Gupta, Anil K., F.R.C.S., 1929(E).
Guthrie, Harry A. L., L.R.C.P. & S., 1915(S).
Gyi, Maung M., M.R.C.S., 1928(E).

Hacker, Emerich, M.R.C.S., 1929(E).
Hadley, Kenneth H., F.R.C.S., 1926(E).
Halahan, Samuel H., M.B., 1885(I).
Hall, Arthur J., M.B., 1902(E).
Hall, Richard C. B., M.R.C.S., 1900(E).
Halpin, Cornelius J., M.B., 1915(I).
Hamilton, Reginald H., L.R.C.P., 1889(E).
Hamp, Edward J., M.R.C.S., 1929(E).
Handousa, Ahmad E., M.R.C.S., 1928(E).
Hanly, Thomas F., L.R.C.P., 1884(E).
Hanna, Zaky, M.B., 1930(E).
Hannan, John, M.B., 1921(I).
Harding, James J., F.R.C.S., 1879(I).
Hargraves, Frederick G., L.M.S.S.A., 1892(E).
Harper, Rodolphus W., M.B., 1905(I).
Harpur, James, M.B., 1900(I).
Harpur, Thomas P., L.R.C.P. & S., 1921(I).
Harris, Arthur G. R., M.R.C.S., 1871(E).
Harrison, Sydney N., M.B., 1891(E).
Harsant, William H., F.R.C.S., 1874(E).
Hart, Frank J. L., M.B., 1886(S).
Hart, Maurice R. W., M.R.C.S., 1928(E).
Harvey, Peter G., M.R.C.S., 1923(E).
Harvey, William J. S., *D.S.O.*, M.R.C.S., 1898(E).
Hashish, Mahdy S., M.R.C.S., 1921(E).
Haslam, Henry C., M.B., 1897(E).
Hasler, Frederic, L.S.A., 1895(E).
Hawkes, Henry, L.R.C.P. & S., 1924(I).
Hayes, Laurence A., M.B., 1925(I).
Hayne, Percy A., M.R.C.S., 1902(E).
Healy, James, M.B., 1928(I).
Heberden, William S., M.R.C.S., 1889(E).
[illegible] & S., 1910(I).
[illegible] 18(I).
[illegible] 1912(E).
[illegible] (E).
Hennessy, Joseph P., M.B., 1918(I).
Henry, George H., L.Med.L.S., 1927(I).
Henry (Mrs.), L. M. S., M.D., 1916(E).
Hensman, Henry S., M.R.C.S., 1915(E).
Heron, Pauline M. T., M.B., 1924(I).
Hetherington, John, M.B., 1920(E).
Hickey, Carl C., M.R.C.S., 1906(E).
Hickson, Robert, L.R.C.P., 1882(I).
Higgins, Patrick C., M.R.C.S., 1896(E).
Hill, Agnes MacI., L.R.C.P. & S., 1920(S).
Hines, Arthur, M.B., 1907(E).
Hobson, Henry O., M.D., 1899(E).
Hodges, Ralph W., L.R.C.P., 1879(I).
Hodgkins, Albert E., M.R.C.S., 1898(E).
Hodgman, Jan. H., M.B., 1923(I).
Hoey, Connel, L.R.C.P., 1887(I).
Holmes, Edwin, F.R.C.S., 1923(E).
Holmes, Raymond E., M.R.C.S., 1929(E).
Homewood, Arthur N., M.B., 1915(S).
Hooper, Otto, B.M., 1926(E).
Hope, Percy L., M.R.C.S., 1899(E).
Hough, Herbert B., M.R.C.S., 1930(E).
Howson, James, M.B., 1868(S).
Howle, Walter C., L.M.S.S.A., 1892(E).
Hudson, Frank, F.R.C.S., 1922(E).
Huffton, Edith, L.R.C.P. & S., 1915(E).
Hugo, Albrecht D. H., M.R.C.S., 1930(E).
Hulme, Edward, M.B., 1926(E).
Hunt, Edmund H., F.R.C.S., 1900(E).
Hunt, Henry, L.R.C.P. & S., 1895(I).
Hunt, Howard W., M.R.C.S., 1882(E).
Hunter, Edward A., M.R.C.S., 1928(E).
Huston, John A. F., M.B., 1926(I).
Hutchinson, Ormond L., M.R.C.S., 1925(E).
Hutchison, James A., L.R.C.P., 1887(S).
Hutton, William K., M.B., 1898(S).
Huyssen, Charles W., M.R.C.S., 1908(E).

Irvine, Francis P., M.B., 1925(E).
Ismail, Ali, M.R.C.S., 1927(E).

Jackson, Maldwyn L., M.R.C.S., 1927(E).
Jackson, Robert E., M.B., 1928(E).
Jafar, Muhammad, M.R.C.S., 1928(E).
Jaffe, Mossy, M.B., 1923(I).
Jago, William J., M.R.C.S., 1907(E).
James, Hugh E., M.B., 1927(E).
James, Kenneth L., M.R.C.S., 1929(E).
Jamieson, Archibald, L.S.A., 1887(E).
Janse van Rensburg, Willem J., M.B., 1924(I).
Jarvis, Joseph H. E., M.R.C.S., 1887(E).
Jeans, Francis A., M.R.C.S., 1877(E).
Jellett, James W. H., M.D., 1888(I).
Jennings, Edward, M.R.C.S., 1878(E).
Jilani, Khurshed, M.B., 1928(E).
Johnson, Edward P., M.B., 1928(E).
Johnson, James D., M.B., 1917(E).
Johnston, Benjamin G., F.R.C.S., 1927(E).
Johnston, George L. H., M.R.C.S., 1908(E).
Jolliffe, James H., L.R.C.P., 1885(E).
Jones, Aneuryn M., M.R.C.S., 1927(E).
Jones, George F., M.B., 1891(E).
Jones, James P., *M.C.*, M.R.C.S., 1915(E).
Jones, Thomas, L.S.A., 1897(E).
Jordan, John F., F.R.C.S., 1889(E).
Joyce, George H. M., M.B., 1923(I).
Juett, Alexander, B.M., 1913(E).
Junk, David, M.D., 1887(I).

Kapur, Prag N., M.R.C.S., 1925(E).
Katz, Rebecca, M.B., 1925(E).
Kealy, Mary A., L.R.C.P. & S., 1929(I).
Kearns, Joseph M., M.B., 1919(I).
Keess, Ivy, M.R.C.S., 1916(E).
Kehoe, Anne C., M.B. 1924(I).
Kelaney, Sayed A., L.R.C.P. & S., 1929(E).
Kelleher, Joseph, M.B., 1921(I).
Keller, Cecil H., M.B., 1920(I).
Kelly, James A., M.B., 1925(I).
Kelly, Thomas, M.B., 1916(I).
Kember, Arthur T., F.R.C.S., 1891(E).
Kendall (Mrs.), Cornelia, M.B., 1924(E).
Kerr, Charles D., M.B., 1911(E).
Kerr, Charles L., M.B., 1907(S).
Kerr, James J., L.R.C.P., 1882(I).
Kerr, William M., M.B., 1917(S).
Keukenschrijver, Nicolaas C. R., L.M.S.S.A., 1928(E).
Keys, Elias, M.R.C.S., 1881(E).
Keys, Robert A., F.R.C.S., 1871(E).
Khandwalla, Mungaldas T., M.B., 1915(Col).
Kidd, Charles, M.B., 1900(I).
Kinder, Alexander, M.B., 1908(E).
King, Stanley W. M., M.R.C.S., 1924(E).
Kingsbury, George C., M.D., 1882(I).
Kinloch, John A., L.R.C.P. & S., 1886(S).
Kinsella, John J., M.B., 1897(I).
Kirwan, John F., M.B., 1924(I).
Knight, Olive C., M.R.C.S., 1927(E).
Kobbekaduwe, Tikiri B., M.R.C.S., 1905(E).
Krause, Otto F. A., M.R.C.S., 1925(E).

Land (Mrs.), Dulcie E. (formerly Williams), L.R.C.P. & S., 1911(E).
Lapidus, Hyman E., M.B., 1922(E).
Lapraik, George, M.B., 1887(S).
Laurence, Charles S., L.M.S.S.A., 1923(E).
Lawlor, Michael, M.B., 1915(I).

INFECTIOUS DISEASES

There was a great reduction in the prevalence of small-pox, bearing out the impression that the disease increases in any district for four or five years and then declines. There was also a substantial decrease in enteric fever. Diphtheria immunisation has become much more popular and has given strikingly good results; unfortunately no such claim can yet be made for immunisation against scarlet fever. The value of convalescent serum in preventing and treating measles is now placed beyond doubt. One of the outstanding epidemiological features of the year was the rise in the incidence of cerebro-spinal fever, following that of the previous year. There was a continued decline in acute poliomyelitis and encephalitis lethargica. The influenza epidemic of the year was mild and showed no unusual features.

The total number of deaths from tuberculosis was 35,818. There has been a decline in the death-rate from all forms, though in varying degrees. The Ministry attach great importance to the ascertainment of all cases; in most cases, it is held, the source of infection can be traced if contacts are examined. A negative reaction to tuberculin is reliable and useful in eliminating suspects. Tuberculosis schemes are in a stage of transition at the present time, but increasing use is being made of dispensaries and of beds for observation. Artificial light is held to have a definite importance in treatment. The Ministry has investigated the salt-free diets recommended in Germany, but finds that they are expensive, involve administrative difficulty and expense, and are disliked by the patients. Their value is insufficiently established to justify extended trial.

The mortality for rheumatic fever shows a gratifying decrease in 1931, and a decrease in the death-rate from heart disease in the younger age-groups is also recorded; the continued high figure for heart disease is largely fictitious, being due to the increase in the age of the population and to the change in the form of death certificates. The research and clinical work carried on during the year on acute and chronic rheumatism is reviewed.

At the end of 1931 189 venereal disease treatment centres were available; a number of centres have increased their facilities for treatment. It is not yet possible to estimate accurately the amount of delay in seeking advice, but in centres where accurate figures are kept a gratifying improvement in the promptitude with which the men come for treatment is noticed, though women still delay. Nevertheless, there is a decline in syphilis in women, which is ascribed to increased education. There seems to be no reduction in the amount of gonorrhœa in the country. Experiments in the use of vaccines suggest that, except at the early stages, the titre of the complement-fixation reaction can be raised considerably by a vaccine, and at the same time the organisms disappear.

FOOD AND DRINK

The work of the Ministry in relation to individual and national health and the safeguarding of food from deficiency, adulteration, and transmissible disease is discussed. About 15,000 cattle were included in licensed herds during 1931. The double intradermal tuberculin test, although it has been strongly criticised, has been found to be much more reliable in skilled hands than have other methods. Laxity in complying with the regulations has been the cause of disaster in several herds; it may be necessary to adopt more severe penalties and to revise the regulations to include more frequent testing of certain herds. No herd owner can hope to attain or retain a designated milk licence if he attempts to immunise his cattle by the use of a vaccine, for every animal will react to the tuberculin test.

The jam standards adopted recently by the Food Manufacturers' Federation have been widely criticised as unduly low. Sir George Newman says that the tendency in the jam trade in recent years has undoubtedly been to reduce the amount of fruit and to rely on "improved" methods of manufacture to retain the appearance, consistency, and taste of the older "home made" article. Strictly speaking, the insignificant proportion of expensive whole-fruit jam is the only jam entitled to the term "first class" or "full fruit standard." The practice of polishing apples with a very thin film of paraffin wax seems to be harmless and is said to preserve the fruit. A more doubtful practice is the dyeing of oranges to improve their colour; when dye conceals unripeness or inferiority its use may be an infringement of the Food and Drugs Act, 1928.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. W. M. Greer is transferred to the Permanent List.

Surg. Lt. (D) W. E. L. Brigham to be Surg. Lt.-Comdr. (D).

W. P. Culbertson to be Surg. Lt.

The following appts. are notified: Surg. Comdrs. E. L. Markham to *Pembroke*, for R.N. Barracks; N. A. H. Barlow to *Cairo*, and as squadron medical officer; G. E. Heath to *Excellent;* H. L. Peregrine to *Victory*, for R.N. Barracks; J. D. Bangay to *Hawkins;* J. C. Brown to *Royal Sovereign;* M. B. Macleod to *Malaya;* L. A. Moncrieff to *Victory*, for Portsmouth; and T. G. B. Crawford to *Pembroke*, for R.N. Barracks.

Surg. Lt.-Comdrs. (D) D. Barker to *Pembroke* for R.N. Barracks, Chatham; A. D. McHaffie to *President*, addl., for course; and W. E. A. Sampson to *Pembroke*, for R.M. Infirmary, Deal.

Surg. Lts. J. B. W. Rowe to *Victory*, for R.N. Barracks; J. G. Lynch to *Vivid*, for R.N. Barracks; and H. S. Marks to *Pembroke*, for R.N. Barracks, Chatham.

Surg. Lts. (D) P. S. Turner to *Victory*, for Haslar Hospital; L. F. Fairey to *Sandhurst;* and A. W. Y. Price to *Sussex*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. W. Lennon is appointed to *Victory*, for R.N. Hospital, Haslar.

ROYAL ARMY MEDICAL CORPS

Lt. R. D. MacRae resigns his commn.

RESERVE OF OFFICERS

Lt.-Col. B. S. Bartlett, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Capt. D. J. Davies to be Maj.

Lt. E. G. Mackie (late R. Scots) to be Capt., and relinquishes the rank of Lt.

INDIAN MEDICAL SERVICE

The undermentioned officers have vacated appts. in India: *A.D.M.S.:* Maj.-Gen. T. G. F. Paterson. *D.A.D's.P.:* Maj. L. Dunbar, R.A.M.C., and Maj. N. T. Whitehead, R.A.M.C.

The undermentioned appts. have been made: *D.A.D.M.S.:* Maj. R. D. Cameron, R.A.M.C. *A.D.P.:* Maj. L. Dunbar, R.A.M.C.

ROYAL AIR FORCE

Dental Branch.—The undermentioned are granted non-permanent commissions as Flying Officers: H. Keggin and V. H. Weeks.

COLONIAL MEDICAL SERVICE

Dr. H. D. Weatherhead (Assistant Medical Officer, British Guiana) has been apptd. Supernumerary Medical Officer, Leeward Islands.

THE MEDICAL REGISTER:

UNTRACEABLE PRACTITIONERS IN 1932

WE are asked by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. Anyone, wherever resident, who finds his or her name included in this list should communicate immediately with the Registrar, 44, Hallam-street, Portland-place, London, W. 1, otherwise the name will be omitted from the next issue of the Medical Register. There may be some who have replied while this list was in the press. The date given is that of registration; the qualification is the principal one registered. The letters (E), (S), and (I) denote registration at the English, Scottish, or Irish branches respectively; (Col) and (For) denote registration in the Colonial and Foreign Lists of the Register. Those marked (S) should communicate direct with the Registrar of the Scottish Branch Council, 12, Queen-street, Edinburgh.

Ahmed, Zalnoor, A., M.D., 1872(I).
Anklesaria, Kawas P., M.B., 1929(Col).

Bochenek, Samuel, M.R.C.S., 1930(E).
Boland, William J. V., L.R.C.P. & S., 1925(I).
Burns, Robert E. J., M.B., 1918(S).

Campbell, James McN., L.R.C.P. & S., 1921(S).
Carte, Alexander E., L.R.C.P., 1884(I).
Coffey, Thomas, L.R.C.P. & S., 1919(I).
Coombs, Cyril G., M.R.C.S., 1918(E).
Cresswell, Norman, L.A.H., 1926(I).

Davies, Thomas H. R., M.R.C.S., 1922(E).
De Chazal, Edmond L., *C.B.E.*, M.D., 1886(E).
Dillon, Henry de C., M.B., 1907(I).

Esterman, Alfred, M.B., 1926(S).

Fahy, Peter, M.B., 1923(I).
Fallon, Robert H., M.D., 1881(E).
Fanaken, Patrick F., L.M.S.S.A., 1927(E).
Fanning, William J., M.R.C.S., 1898(E).
Farrell, John, M.B., 1921(I).
Faruqi, Shaikh M. A., M.D., 1917(E).
Fathi, Joseph T., F.R.C.S., 1925(E).
Fausset, Robert E., M.B., 1924(I).
Fausset-Farquhar, Andrew G., M.B., 1885(I).
Fawcett, Edmund C., M.B., 1913(I).
Feldman, Harold M., L.M.S.S.A., 1929(E).
Fernandes, Alexander S. S., M.R.C.P., 1881(S).
Fernando, Walter A., M.R.C.S., 1910(E).
Ferran, Theresa A., M.B., 1921(I).
Findlay, Granville L., M.B., 1897(S).
Fisher, Alfred C., F.R.C.S., 1928(E).
Fisher, Arthur G., M.B., 1915(I).
Fitch, Richard A., M.R.C.S., 1881(E).
Fitzgerald, Gerald C., M.D., 1887(E).
Fitzgerald, John, M.B., 1930(I).
Fitzgerald, Michael J., M.B., 1926(I).
Fitzgibbon, Maurice, M.B., 1904(I).
Fitz-Patrick, Louis, L.R.C.P., 1882(I).
Fletcher, James H., *D.S.O.*, *M.C.*, L.Med.L.S., 1914(I).
Fletcher, Roland H., M.R.C.S., 1895(E).
Flood, James J., M.B., 1907(I).
Flood, Patrick J., L.R.C.P. & S., 1917(I).
Flowers, Wilfred S., M.B., 1925(E).
Foerster, Arthur E., M.R.C.S., 1907(E).
Forbes, Elizabeth S., M.B., 1920(S).
Forbes, Robert D., F.R.C.S., 1907(E).
Ford, John C. C., L.R.C.P. & S., 1889(E).
Forster, William A. de V., M.D., 1901(I).
Forsyth, Robert, M.B., 1889(I).
Forsyth, Robert L., M.B., 1925(I).
Fourie, Louis, M.B., 1905(S).
Fowler, Donald A., M.B., 1929(S).
Foy, George M., F.R.C.S., 1875(I).
Freedman, Ivan J., M.B., 1927(E).
French, Louis A. W., M.R.C.S., 1897(E).
Freyer, Patrick W., M.B., 1907(S).
Friedlander, Arthur J., M.R.C.S., [illegible](E).
Fristedt, Els[illegible]
Fryer, John, [illegible]
Fullam, Will[illegible]
Fulton, Jane D., M.B., 1925(I).

Gairdner, John, M.R.C.S., 1876(E).
Galbraith, Dorothy E., M.R.C.S., 1924(E).
Game, Lennard, M.R.C.S., 1910(E)
Gane, Noel G. C., M.R.C.S., 1923(E).
Gannon, Diego, L.R.C.P., 1884(E).
Garretson, Wendell T., L.R.C.P. & S., 1917(E).
Gatenby, George, M.B., 1898(E).
Gayton, Francis C., M.D., 1878(E).
Gibson, Sydney H., M.R.C.S., 1904(E).
Girgis, Eskander, M.B., 1923(E).
Girgis, Ibrahim, M.B., 1920(E).
Girgis, Kamel, L.M.S.S.A., 1929(E).
Girgis, Riad, M.B., 1926(E).
Gladish, Albert D., M.R.C.S., 1923(E).
Glanville, William M. G., B.M., 1901(E).
Glover, Agnes, M.B., 1928(I).
Glynn, Eric H., M.R.C.S., 1925(E).
Glynn, John J., L.R.C.P. & S., 1913(I).
Goggin, Mary F., M.B., 1925(I).
Gordon, Coral O., M.B., 1919(S).
Gordon, Jack M., M.B., 1924(I).
Gould, Charles H., M.B., 1913(E).
Graham, Samuel, L.R.C.P., 1883(I).
Gravelle, Arthur E., M.R.C.S., 1915(E).
Gray, David W. J., M.B., 1919(I).
Gray, Dorothy E., M.B., 1923(E).
Gray, Hector M., M.B., 1928(S).
Gray, Herbert E., M.R.C.S., 1898(E).
Gray, John, F.R.C.S., 1925(E).
Green, Cyril A. H., M.R.C.S., 1924(E).
Gregg, Francis B., L.A.H., 1876(I).
Griffin, Blanche G. C., M.B., 1911(I).
Griffith, James de B., M.B., 1874(I).
Griffiths, John, M.R.C.S., 1888(E).
Grobler, Paul J., M.B., 1923(I).
Grove, Frederick P., M.R.C.S., 1901(E).
Guilfoyle, Francis P., M.R.C.S., 1926(E).
Gunne, John R., M.R.C.S., 1906(E).
Gupta, Anil K., F.R.C.S., 1929(E).
Guthrie, Harry A. L., L.R.C.P. & S., 1915(S).
Gyi, Maung M., M.R.C.S., 1928(E).

Hacker, Emerich, M.R.C.S., 1929(E).
Hadley, Kenneth H., F.R.C.S., 1926(E).
Halahan, Samuel H., M.B., 1885(I).
Hall, Arthur J., M.B., 1902(E).
Hall, Richard C. B., M.R.C.S., 1900(E).
Halpin, Cornelius J., M.B., 1915(I).
Hamilton, Reginald H., L.R.C.P., 1889(E).
Hamp, Edward J., M.R.C.S., 1929(E).
Handousa, Ahmad E., M.R.C.S., 1928(E).
Hanly, Thomas F., L.R.C.P., 1884(E).
Hanna, Zaky, M.B., 1930(E).
Hannan, John, M.B., 1921(I).
Harding, James J., F.R.C.S., 1879(I).
Hargraves, Frederick G., L.M.S.S.A., 1892(E).
Harper, Rodolphus W., M.B., 1905(I).
Harpur, James, M.B., 1900(I).
Harpur, Thomas P., L.R.C.P. & S., 1921(I).
Harris, Arthur G. R., M.R.C.S., 1871(E).
Harrison, Sydney N., M.B., 1891(E).
Harsant, William H., F.R.C.S., 1874(E).
Hart, Frank J. L., M.B., 1886(S).
Hart, Maurice R. W., M.R.C.S., 1928(E).
Harvey, Peter G., M.R.C.S., 1923(E).
Harvey, William J. S., *D.S.O.*, M.R.C.S., 1898(E).
Hashish, Mahdy S., M.R.C.S., 1921(E).
Haslam, Henry C., M.B., 1897(E).
Hasler, Frederic, L.S.A., 1898(E).
Hawkes, Henry, L.R.C.P. & S., 1924(I).
Hayes, Laurence A., M.B., 1925(I).
Hayne, Percy A., M.R.C.S., 1902(E).
Healy, James, M.B., 1928(I).
Heberden, William S., M.R.C.S., 1889(E).
Heffernan, John T., L.R.C.P. & S., 1910(I).
Heffernan, Michael, M.B., 1918(I).
Heiron, George M., M.R.C.S., 1912(E).
Helmy, Ali, M.R.C.S., 1925(E).
Hennessy, Joseph P., M.B., 1918(I).
Henry, George H., L.Med.L.S., 1927(I).
Henry (Mrs.), L. M. S., M.D., 1916(E).
Hensman, Henry S., M.R.C.S., 1915(E).
Heron, Pauline M. T., M.B., 1924(I).
Hetherington, John, M.B., 1920(E).
Hickey, Carl C., M.R.C.S., 1906(E).
Hickson, Robert, L.R.C.P., 1882(I).
Higgins, Patrick C., M.R.C.S., 1896(E).
Hill, Agnes MacI., L.R.C.P. & S., 1920(S).
Hines, Arthur, M.B., 1907(E).
Hobson, Henry O., M.D., 1899(E).
Hodges, Ralph W., L.R.C.P., 1879(I).
Hodgkins, Albert E., M.R.C.S., 1898(E).
Hodgman, Jan. H., M.B., 1923(I).
Hoey, Connel, L.R.C.P., 1887(I).
Holmes, Edwin, F.R.C.S., 1923(E).
Holmes, Raymond E., M.R.C.S., 1929(E).
Homewood, Arthur N., M.B., 1915(S).
Hooper, Otto, B.M., 1926(E).
Hope, Percy L., M.R.C.S., 1899(E).
Hough, Herbert B., M.R.C.S., 1930(E).
Howson, James, M.B., 1868(S).
Howle, Walter C., L.M.S.S.A., 1892(E).
Hudson, Frank, F.R.C.S., 1922(E).
Huffton, Edith, L.R.C.P. & S., 1915(E).
Hugo, Albrecht D. H., M.R.C.S., 1930(E).
Hulme, Edward, M.B., 1926(E).
Hunt, Edmund H., F.R.C.S., 1900(E).
Hunt, Henry, L.R.C.P. & S., 1895(I).
Hunt, Howard W., M.R.C.S., 1882(E).
Hunter, Edward A., M.R.C.S., 1928(E).
Huston, John A. F., M.B., 1926(I).
Hutchinson, Ormond L., M.R.C.S., 1925(E).
Hutchison, James A., L.R.C.P., 1887(S).
Hutton, William K., M.B., 1898(S).
Huyssen, Charles W., M.R.C.S., 1908(E).

Irvine, Francis P., M.B., 1925(E).
Ismail, Ali, M.R.C.S., 1927(E).

Jackson, Maldwyn I., M.R.C.S., 1927(E).
Jackson, Robert E., M.B., 1928(E).
Jafar, Muhammad, M.R.C.S., 1928(E).
Jaffe, Mossy, M.B., 1923(I).
Jago, William J., M.R.C.S., 1907(E).
James, Hugh E., M.B., 1927(E).
James, Kenneth L., M.R.C.S., 1929(E).
Jamieson, Archibald, L.S.A., 1887(E).
Janse van Rensburg, Willem J., M.B., 1924(I).
Jarvis, Joseph H. E., M.R.C.S., 1887(E).
Jeans, Francis A., M.R.C.S., 1877(E).
Jellett, James W. H., M.D., 1888(I).
Jennings, Edward, M.R.C.S., 1878(E).
Jilani, Khurshed, M.B., 1928(E).
Johnson, Edward P., M.B., 1928(E).
Johnson, James D., M.B., 1917(E).
Johnston, Benjamin G., F.R.C.S., 1927(E).
Johnston, George L. H., M.R.C.S., 1908(E).
Jolliffe, James H., L.R.C.P., 1885(E).
Jones, Aneuryn M., M.R.C.S., 1927(E).
Jones, George F., M.B., 1891(E).
Jones, James P., *M.C.*, M.R.C.S., 1915(E).
Jones, Thomas, L.S.A., 1897(E).
Jordan, John F., F.R.C.S., 1889(E).
Joyce, George H. M., M.B., 1923(I).
Juett, Alexander, B.M., 1913(E).
Junk, David, M.D., 1887(I).

Kapur, Prag N., M.R.C.S., 1925(E).
Katz, Rebecca, M.B., 1925(E).
Kealy, Mary A., L.R.C.P. & S., 1929(I).
Kearns, Joseph M., M.B., 1919(I).
Keess, Ivy, M.R.C.S., 1916(E).
Kehoe, Anne C., M.B. 1924(I).
Kelaney, Sayed A., L.R.C.P. & S., 1929(E).
Kelleher, Joseph, M.B., 1921(I).
Keller, Cecil H., M.B., 1920(I).
Kelly, James A., M.B., 1925(I).
Kelly, Thomas, M.B., 1916(I).
Kember, Arthur T., F.R.C.S., 1891(E).
Kendall (Mrs.), Cornelia, M.B., 1924(E).
Kerr, Charles D., M.B., 1911(E).
Kerr, Charles L., M.B., 1907(S).
Kerr, James J., L.R.C.P., 1882(I).
Kerr, William M., M.B., 1917(S).
Keukenschrijver, Nicolaas C. R., L.M.S.S.A., 1928(E).
Keys, Elias, M.R.C.S., 1881(E).
Keys, Robert A., F.R.C.S., 1871(E).
Khandwalla, Mungaldas T., M.B., 1915(Col).
Kidd, Charles, M.B., 1900(I).
Kinder, Alexander, M.B., 1908(E).
King, Stanley W. M., M.R.C.S., 1924(E).
Kingsbury, George C., M.D., 1882(I).
Kinloch, John A., L.R.C.P. & S., 1886(S).
Kinsella, John J., M.B., 1897(I).
Kirwan, John F., M.B., 1924(I).
Knight, Olive C., M.R.C.S., 1927(E).
Kobbekaduwe, Tikiri B., M.R.C.S., 1905(E).
Krause, Otto F. A., M.R.C.S., 1925(E).

Land (Mrs.), Dulcie E. (formerly Williams), L.R.C.P. & S., 1911(E).
Lapidus, Hyman E., M.B., 1922(E).
Lapraik, George, M.B., 1887(S).
Laurence, Charles S., L.M.S.S.A., 1923(E).
Lawlor, Michael, M.B., 1915(I).

INFECTIOUS DISEASES

There was a great reduction in the prevalence of small-pox, bearing out the impression that the disease increases in any district for four or five years and then declines. There was also a substantial decrease in enteric fever. Diphtheria immunisation has become much more popular and has given strikingly good results; unfortunately no such claim can yet be made for immunisation against scarlet fever. The value of convalescent serum in preventing and treating measles is now placed beyond doubt. One of the outstanding epidemiological features of the year was the rise in the incidence of cerebro-spinal fever, following that of the previous year. There was a continued decline in acute poliomyelitis and encephalitis lethargica. The influenza epidemic of the year was mild and showed no unusual features.

The total number of deaths from tuberculosis was 35,818. There has been a decline in the death-rate from all forms, though in varying degrees. The Ministry attach great importance to the ascertainment of all cases; in most cases, it is held, the source of infection can be traced if contacts are examined. A negative reaction to tuberculin is reliable and useful in eliminating suspects. Tuberculosis schemes are in a stage of transition at the present time, but increasing use is being made of dispensaries and of beds for observation. Artificial light is held to have a definite importance in treatment. The Ministry has investigated the salt-free diets recommended in Germany, but finds that they are expensive, involve administrative difficulty and expense, and are disliked by the patients. Their value is insufficiently established to justify extended trial.

The mortality for rheumatic fever shows a gratifying decrease in 1931, and a decrease in the death-rate from heart disease in the younger age-groups is also recorded; the continued high figure for heart disease is largely fictitious, being due to the increase in the age of the population and to the change in the form of death certificates. The research and clinical work carried on during the year on acute and chronic rheumatism is reviewed.

At the end of 1931 189 venereal disease treatment centres were available; a number of centres have increased their facilities for treatment. It is not yet possible to estimate accurately the amount of delay in seeking advice, but in centres where accurate figures are kept a gratifying improvement in the promptitude with which the men come for treatment is noticed, though women still delay. Nevertheless, there is a decline in syphilis in women, which is ascribed to increased education. There seems to be no reduction in the amount of gonorrhœa in the country. Experiments in the use of vaccines suggest that, except at the early stages, the titre of the complement-fixation reaction can be raised considerably by a vaccine, and at the same time the organisms disappear.

FOOD AND DRINK

The work of the Ministry in relation to individual and national health and the safeguarding of food from deficiency, adulteration, and transmissible disease is discussed. About 15,000 cattle were included in licensed herds during 1931. The double intradermal tuberculin test, although it has been strongly criticised, has been found to be much more reliable in skilled hands than have other methods. Laxity in complying with the regulations has been the cause of disaster in several herds; it may be necessary to adopt more severe penalties and to revise the regulations to include more frequent testing o certain herds. No herd owner can hope to attai or retain a designated milk licence if he attempts t immunise his cattle by the use of a vaccine, for ever animal will react to the tuberculin test.

The jam standards adopted recently by the Foo Manufacturers' Federation have been widely criticise as unduly low. Sir George Newman says that th tendency in the jam trade in recent years ha undoubtedly been to reduce the amount of fruit an to rely on "improved" methods of manufactur to retain the appearance, consistency, and taste of th older "home made" article. Strictly speaking, th insignificant proportion of expensive whole-frui jam is the only jam entitled to the term "first class or "full fruit standard." The practice of polishin apples with a very thin film of paraffin wax seem to be harmless and is said to preserve the fruit. more doubtful practice is the dyeing of oranges t improve their colour; when dye conceals unripenes or inferiority its use may be an infringement of th Food and Drugs Act, 1928.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. W. M. Greer is transferred to the Permanent Lis

Surg. Lt. (D) W. E. L. Brigham to be Surg. Lt.-Comdr. (D W. P. Culbertson to be Surg. Lt.

The following appts. are notified: Surg. Comdrs. E. Markham to *Pembroke*, for R.N. Barracks; N. A. Barlow to *Cairo*, and as squadron medical officer; G. Heath to *Excellent;* H. L. Peregrine to *Victory*, for R. Barracks; J. D. Bangay to *Hawkins;* J. C. Brown *Royal Sovereign;* M. B. Macleod to *Malaya;* L. A. Moncrie to *Victory*, for Portsmouth; and T. G. B. Crawford *Pembroke*, for R.N. Barracks.

Surg. Lt.-Comdrs. (D) D. Barker to *Pembroke* for R. Barracks, Chatham; A. D. McHaffie to *President*, addl for course; and W. E. A. Sampson to *Pembroke*, for R. Infirmary, Deal.

Surg. Lts. J. B. W. Rowe to *Victory*, for R.N. Barracks J. G. Lynch to *Vivid*, for R.N. Barracks; and H. S. Mar to *Pembroke*, for R.N. Barracks, Chatham.

Surg. Lts. (D) P. S. Turner to *Victory*, for Haslar Hospita L. F. Fairey to *Sandhurst;* and A. W. Y. Price to *Susse*

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. W. Lennon is appointed to *Victory*, for R. Hospital, Haslar.

ROYAL ARMY MEDICAL CORPS

Lt. R. D. MacRae resigns his commn.

RESERVE OF OFFICERS

Lt.-Col. B. S. Bartlett, having attained the age limit liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Capt. D. J. Davies to be Maj.

Lt. E. G. Mackie (late R. Scots) to be Capt., and relinquish the rank of Lt.

INDIAN MEDICAL SERVICE

The undermentioned officers have vacated appts. India: *A.D.M.S.:* Maj.-Gen. T. G. F. Patterso *D.A.D's.P.:* Maj. L. Dunbar, R.A.M.C., and Maj. N. Whitehead, R.A.M.C.

The undermentioned appts. have been mad *D.A.D.M.S.:* Maj. R. D. Cameron, R.A.M.C. *A.D.P.* Maj. L. Dunbar, R.A.M.C.

ROYAL AIR FORCE

Dental Branch.—The undermentioned are granted no permanent commissions as Flying Officers: H. Kegg and V. H. Weeks.

COLONIAL MEDICAL SERVICE

Dr. H. D. Weatherhead (Assistant Medical Officer, Briti Guiana) has been apptd. Supernumerary Medical Offic Leeward Islands.

stands in the way of the completion of the scheme. That the present scheme has extended slowly is perhaps all for the best, as this tends to promote a desire on the part of those areas not included to partake of the benefits of a complete dental service."

Throughout his report Dr. J. A. Fairer indicates that the education committee are getting good value for their outlay. Routine work is being carried out efficiently, and the encouragement given to research fosters enthusiasm. The examples of such work in the present report have not been cut down on the plea of the cost of printing. They include a note on myopia which amplifies an Ealing report on the same subject by recording 38 obstinate cases of blepharitis cured by correction of minor refractive errors. Dr. Constance Walters thinks the chronic inflammation is kept up by the strain of accommodation, and it is apt to occur with hypermetropia of two dioptres or less, because it is in these cases that accommodation will give normal vision, and therefore the strain is maintained. An investigation by Dr. David Anderson deals with the relation between scarlet fever and other defects, especially enlarged tonsils and adenoids. Analysing the records of 1520 children he deduces that enlarged tonsils and/or adenoids increase the liability to scarlet fever, and that scarlet fever tends to cause enlarged tonsils and/or adenoids, or at least to make a pre-existing enlargement more permanent. A thoughtful discussion by Dr. K. Cowan on the orthopædic scheme as a preventive service concludes:—

> "The scheme should embrace all departments of the health services of the area—maternity and child welfare schools, tuberculosis, &c.—and all the agencies of ascertainment in each department should be coördinated under a single control. A much greater return will be obtained from expenditure on an organisation for prevention than upon that for treatment, and a higher proportion of the money allocated for orthopædics might with benefit be diverted for this purpose. At the best the treatment of crippling defects is an expensive burden upon the local authority. The only means of alleviating this burden is concentration of effort on prevention, and in all phases of the orthopædic scheme the essence of prevention is early ascertainment."

In the aggregate of these contributions there is an addition to our knowledge of real economic value.

Wiltshire

There is in this county no open-air school in the strict sense, but part of the Marlborough public assistance institution has just been opened as convalescent accommodation for children, and it is stated, "this provision has already been the means of re-establishing health for many children who were otherwise drifting into chronic disability." Rheumatic heart clinics are active in the county, and when it is remembered that rheumatic and heart affections cause more loss of working time in the industrial world than strikes, it is evident that this work is of economic value. Direct proof of a good return is given in an investigation by Dr. Janet McKay of the after-history of 82 cases treated at the Bath Orthopædic Hospital between 1924 and 1931. The results were:—

	School cases.	Over school age.
Cured	7	7
Much improved	9	24
Improved	11	20
Stationary	2	2
Total	29	53

The classification errs on the side of modesty and the real value is brought out by studying the details which show the practical changes brought about. Few of the cases would have had educational or industrial capacity without treatment, whereas now all the children are attending school and all the adolescents have been working except those marked stationary, which comprise 2 cases of spastic paralysis, 1 of them hopelessly mentally deficient, and 2 cases where treatment was refused. Only 8 of the 53 adolescents have to wear any appliance, and one of these is an artificial limb for a case of sarcoma of the tibia.

MENTAL HOSPITAL REPORTS

The West Sussex County Mental Hospital at Chichester housed 932 patients on Dec. 31st last. Of the 186 admissions during the year, 29 were voluntary, but no temporary patients were received. The hospital is not at present overcrowded. The recovery-rate was 36·5 per cent. and the death-rate 5·6 per cent. Apart from a few cases of influenza, the health was good. The handicraft department continues to provide occupation for patients who cannot be interested in any other way. Parole beyond the estate was given to 16 men and 12 women, and within the grounds to 20 men and 26 women. Five male and four female wards are administered on the open-door principle. An out-patient clinic has been started at the Royal West Hospital at Chichester, in addition to that at the Worthing Hospital. During the year four attendants and eight nurses passed the final examination of the R.M.P.A., and two nurses *became State registered.*

The Isle of Wight County Mental Hospital at Whitecroft had 329 patients in residence on Feb. 3rd, 1932. The recovery-rate for the year was 40 per cent. and the death-rate 9·56 per cent. Apart from three cases of erysipelas, there was no serious infectious disease. The occupational therapy department continues to flourish, and the open-door system is to be adopted. The dental clinic continues to do satisfactory work, and three clinical rooms for therapeutic conversation have been established. The committee hope to establish an out-patient clinic at Ryde before long, and in the meantime the medical superintendent sees at the hospital any case referred to him by medical practitioners.

At the City of Cardiff Mental Hospital there were 777 patients resident on Jan. 1st, 1932; of these 123 were voluntary and 11 were temporary. The recovery-rate for the year was 41·6 per cent., and the death-rate 10·6 per cent. The general health was good, the only infectious or germ-borne diseases being five cases of tuberculosis. The medical superintendent welcomes the new Act which allows the admission of voluntary patients, and cites the case of a man who had invariably suffered three months' misery at home before a minimum period of six months in hospital during his attacks, but who presented himself as a voluntary patient at the very outset of the next attack after the Act, and was discharged recovered in three months. The value of team work is also stressed, an illustrative case cited being the recovery of a patient with a toxic psychosis after pus had been drained from the nasal sinuses by the rhinologist and a vaccine had been prepared by the pathologist. The out-patient clinic continues to do good work; the total attendances during 1931 were 865. A large number of patients have been admitted to the hospital from the clinic on a voluntary basis. A social worker was appointed in May, and her work has proved of the utmost value. Further developments have taken place in the occupational therapy department, and two discharged patients have been appointed voluntary assistants to the occupational therapy officer. Of the male patients 78 per cent., and of the female 87 per cent., are employed in useful tasks. A considerable output of research from the laboratory is recorded. Among the results are that the interference of narcotics with the oxidation of glucose or lactic acid is directly related to their hypnotic power, and that sulphur therapy is worth a trial in schizophrenia. Radiographic examinations of the sinuses were made in 26 cases during the year, and 47 other patients were examined by X rays for various reasons. The dentist attended fortnightly. Short leave of absence was granted to 171 patients on 1226 occasions. Of the nursing staff 18 men and 34 women are registered or certificated.

Lawlor, Solomon, M.B., 1918(I).
Lawrenson, Harman F., M.D., 1887(I).
Leavy, Edward P., F.R.C.S., 1890(I).
Lee, Daniel, M.B., 1885(E).
Lehane, William, M.B., 1916(I).
Leigh-Barlow, Vivian H., L.R.C.P. & S., 1927(S).
Lemass-Boland (Mrs.), Alice M. (formerly Lemass), M.B., 1925(I).
Lennon, John, L.R.C.P. & S., 1930(I).
Leslie, James S., M.R.C.S., 1915(E).
Leslie, William, M.B., 1926(E).
Lewellyn, John W., M.R.C.S., 1902(E).
Lewin, Jessie A., M.B., 1904(E).
Lindow, Albert, M.R.C.S., 1886(E).
Lindsay, Crawford A., M.B., 1926(E).
Lipschitz, Alexander, L.R.C.P. & S., 1927(S).
Lloyd, John T., M.R.C.S., 1904(E).
Lodge, Hilda, M.B., 1921(E).
Loewenthal, Leonard J. A., M.B., 1925(E).
Long, Edwin W., M.R.C.S., 1880(E).
Longford (Mrs.), Geraldine N., M.R.C.S., 1924(E).
Loots, Johannes H., M.B., 1930(E).
Lopez, Vincent J., M.R.C.S., 1930(E).
Loubser, Cornelius J. N., M.B., 1924(I).
Louis, Francis, F.R.C.S., 1922(E).
Louisson, Maurice G., M.R.C.S., 1904(E).
Lovett, Margaret E., M.B., 1926(E).
Lucas, Stanley A., M.R.C.S., 1898(E).
Lum, Kim S., L.R.C.P. & S., 1926(E).
Lundie, Francis R., F.R.C.S., 1927(I).
Lunn, Elsa P., M.R.C.S., 1924(E).
Lush, John S., M.R.C.S., 1876(E).
Lwin, Teong K., M.B., 1918(S).
Lydon, Francis L., M.B., 1924(I).
Lynch, Francis J., L.R.C.P., 1881(I).
Lynch, William W., M.R.C.S., 1901(E).
Lyons, John F., L.R.C.P. & S., 1915(I).
Lyons, Thomas, M.B., 1929(I).
Lysaght, Arthur C., M.R.C.S., 1925(E).

McCullagh, John, M.D., 1880(I).
McCullough, William W., M.B., 1928(I).
McIlwaine, Alfred L., M.B., 1918(S).
Macnamara, John W. U., M.D., 1879(I).
Malone, William A., L.R.C.P. & S., 1916(I).
Mead, Rivis, M.B., 1883(E).
Metzger, George N., M.B., 1917(E).

Naganathan, Elangai M. V., M.R.C.S., 1929(E).

O'Carroll, Christopher J., L.R.C.P.&S., 1916(I).

Parbury, Frederic D., M.R.C.S., 1902(E).
Parsons, Charles W., M.R.C.S., 1883(E).
Pickard, Lawrence N., L.M.S., 1919(Col).
Precope, John, M.R.C.S., 1913(E).

Rattray, Malcolm J., M.R.C.S., 1907(E).
Roland, Bartholomew, M.B., 1926(I).

Shepherd, Richard le F., M.B., 1886(S).
Short, Richard C., M.B., 1927(I).
Slimon, James G., M.B., 1929(S).
Stonehill, Gerald, M.R.C.S., 1928(E).
Sumner, Theodotus J., M.B., 1923(S).

Taylor, William I., M.R.C.S., 1900(E).

Van Dyck (Mrs.), Catherine J., M.B., 1918(S).
Verner, Thomas, L.K.Q.C.P., 1886(I).

Walker, Sydney R., M.R.C.S., 1897(E).
Warren, William E., M.D., 1873(I).
Worthington, Mary, M.B., 1929(E).

PUBLIC HEALTH SERVICES

The Economics of Voluntary Work

SPECULATION is busy on the contents of the expected report on economy in public services. Curtailment in the activities of any particular department will no doubt be preceded by careful consideration and will follow an ordered and regulated method. Action is complicated by the fact that many of the social services had their origin in voluntary organisations which have become assimilated in greater or less degree with the public health authority. An outstanding example of what can be done by voluntary work on a large scale is to be found in London, where the movement for maternal and infant welfare was initiated by voluntary effort and still employs very large numbers of volunteers, with an almost incredible saving, not only in official salaries, but in expenditure on poverty and destitution which almost always accompanies ill-health amongst the poor, and which would otherwise be added to the already heavy burden of the ratepayer. In the social work arising out of the school medical service there is an army of 5–6000 men and women, unpaid officials working under 150 trained organisers, and saving the London ratepayers many thousands of pounds yearly. The following-up of children who require treatment or special observation, for example, is carried out by the school care organisation, which is largely composed of volunteers whose work is coördinated by trained workers. Miss Helen Nussey, writing in the annual report for 1931 of the school medical officer to the Council, remarks :

> "When the Council decided to give an opportunity for the coöperation of the private citizen in work for the community by delegating to children's care committees certain of its duties, the trail had already been blazed by voluntary workers who had banded together to work for children in the poorest schools . . ."

The care committees undertake three important duties : (1) They see that no child in need of food is unprovided for ; (2) that no child found by the school doctor to need treatment fails to receive it ; and (3) that no child leaves school in ignorance of the possibilities the district offers of suitable employment, further education, and social recreation. These workers, coming into contact with the home conditions of school-children and their parents, are the means of preventing a large load of chronic invalidism, with its corollary of destitution and State relief, by arranging for the early treatment of disease and effects. From their contact with a wider environment they can also very often readjust employment to the individual and, in some instances, are able to find work for the unemployed by bringing employer and employee together.

In addition to the devotion of individual voluntary workers, the Council, of course, receives the help of voluntary organisations, such as the S.P.C.C., the I.C.A.A., and the special departments at various voluntary hospitals. During the past year the Shaftesbury Society offered their camp school in Epping Forest to be used for parties of children from day schools for the mentally defective ; the success of this experiment has already been noted in our columns. Another example of organised voluntary effort appears in the special dental centre at Hackney Wick, maintained by the Manor Charitable Trust. Intensive work has been carried out there during the year in connexion with children from two of the Council's schools ; a dental hygienist is attached to this clinic, and a follow-up system of letters and visits to parents who refuse treatment has resulted in a very low percentage of final refusals. The report of Mr. A. T. Pitts of an independent inspection of children from the Wick clinic and children attending the usual dental centres of the Council, indicates clearly that the children from the Wick clinic showed a better dental condition—testimony to the value of voluntary effort. When curtailment of social services is being considered, it is to be hoped that there will be no discouragement of such work, but that a concerted effort will be made to stimulate an interest in the public health services amongst understanding people with time to spare. The example of London might well be followed by provincial areas where resources of this nature remain untapped.

SCHOOL MEDICAL REPORTS

County of Leicester

THE county authorities are evidently shrewd economists, neither lavish nor blindly cheese-paring. Like others they realise they are obliged to limit expenditure, however reluctantly. For example, the senior dentist, Mr. Percy Ashton, regrets that a relative inadequacy of his staff has led to a lessening of the conservative work and an increase of extractions of permanent teeth.

> "Until such time as every school in the county is periodically visited and every child receives systematic treatment, the number of permanent teeth extracted will remain comparatively high. The committee are fully alive to this fact and only the present financial situation

the central fund and to limit the remuneration definitively to the amount of chemists' accounts. Payment of these in full would be guaranteed, but it would entail a reduction of ½d. in dispensing fees. The second suggestion is for the central fund to be retained, but some limitation imposed upon the maximum amount payable to chemists in any year in excess of the sum required to pay their accounts in full. The Minister suggests that one-half the surplus should go to dispensing fees, the other half to insurance funds. Whatever terms are finally adopted will be subject to the emergency deduction of 10 per cent. from the central fund so long as the emergency continues.

Dispensing by an Unqualified Chemist

An insurance committee in the Midlands has lately considered a question of a breach of the terms of service by the dispensing of prescriptions on the part of a firm carrying on the business of chemists and druggists, but not employing a qualified person. The law requires health insurance prescriptions to be dispensed by or under the direct supervision of a registered pharmacist or by a person who, for three years immediately prior to Dec. 11th, 1916, had acted as dispenser to a practitioner or a public institution. The firm in question was without its superintendent chemist through his ill-health, from April to June 8th. During that period no qualified person was employed and the managing director seems to have been responsible for the bulk of the 167 health insurance prescriptions undertaken; 93 of these contained scheduled poisons. The managing director admitted the facts. He said he had been unable to obtain a locum tenens; he had been expecting his superintendent chemist back daily; he had himself had eight years' experience and had occasionally had the help of a friend who was a qualified chemist. The pharmaceutical service subcommittee reported that the facts disclosed a serious and dangerous breach of the terms of service by the firm. It was recommended that the Minister of Health be advised to withhold a sum of £50.

CORRESPONDENCE

SPLENECTOMY FOR SPLENO-MEDULLARY LEUKÆMIA

To the Editor of THE LANCET

SIR,—In your last issue (p. 594) Dr. Hildred Carlill gave a preliminary account of a patient whose spleen was removed for spleno-medullary leukæmia three months ago. I can add a note on a case of longer duration. In January, 1922, I saw a man, aged 48, shortly after a large hæmatemesis and melæna; a day later the spleen was palpable and a blood count showed a marked polymorphonuclear leucocytosis with a slight secondary anæmia; white cells 36,000, and a few weeks later 13,600. In March, 1922, he was admitted to University College Hospital under the care of Dr. Batty Shaw, the spleen being still palpable and the white cell count 9125. The Wassermann test was negative, a barium meal showed nothing abnormal.

An exploratory laparotomy was undertaken by Mr. Raymond Johnson, which confirmed an enlarged spleen free of adhesions; the liver appeared normal, and the patient was discharged to have his spleen X rayed once a month. Further attacks of hæmatemesis and melæna took place, the spleen was enlarging, and at my request Sir John Bland-Sutton removed it about March, 1924, finding no adhesions or great enlargement of the splenic vessels, and there was no hæmorrhage. The exact weight of the spleen I do not remember, but previous to the operation it had reached towards the umbilicus. During convalescence the patient ran a high temperature due to a chronic superficial streptococcus infection, with hæmolytic streptococci in the stools. About May, 1924, the patient saw Sir Aldo Castellani, who had seen him earlier in his illness, and he diagnosed leukæmia. A complete blood count showed—

	White cells.*	Red cells.*	Hb.†		White cells.*	Red cells.*	Hb.†
May, 1924 ..	240	3200	34	June, 1928 (*a*)	100	2590	26
Jan., 1925 ..	88	3860	42	Nov., ,, ..	60	3280	31
May, ,, ..	112	3860	40	Mar., 1929 ..	80	3430	26
Oct., ,, ..	120	3620	34	Oct., ,, (*b*)	56	3780	38
June, 1926 .	60	2240	30	May, 1930 (*c*)	58	3950	43
Jan., 1927 ..	82	2320	34	April, 1931 (*d*)	72	3350	35

* thousands. † per cent.

(*a*) Neutrophil, 600; basophil, 600; eosinophil, 400.
(*b*) Neutrophil, 1288; basophil, 392; eosinophil, 0.
(*c*) Neutrophil, 1700; basophil, 232; eosinophil, 0.
(*d*) Neutrophil, 11,520; basophil, 720; eosinophil, 0. There were about 11,000 nucleated reds per c.mm.

The patient died in October, 1931, following an intestinal hæmorrhage and hæmatemesis. Apart from œdema of the legs there were no complications. X rays to the long bones, arsenic by mouth and injection, benzol in capsules, and an autogenous vaccine formed the treatment. After the removal of the spleen no further hæmorrhages occurred until just before the termination of life. Throughout the patient got about in comfort without undue signs of distress, with an excellent pulse, but marked pallor.

The course of the disease was approximately nine years and nine months in contrast to the more usual prognosis of about two or three years or less, whilst a maximum duration of ten years has been recorded. In my opinion removal of the spleen in the disease, more commonly practised elsewhere, had a good effect in cessation of the hæmorrhages which initially had been moderately severe.

I am, Sir, yours faithfully,
H. AUSTIN WILLIAMS, M.D. Camb.
Kew-road, Sept. 10th, 1932.

PYRETIC TREATMENT

To the Editor of THE LANCET

SIR,—The letter of Dr. H. W. Hales in your issue of Sept. 3rd (p. 542) presents a strong case for the use of artificially-procured pyrexia in the treatment of one form of chronic ill-health. Deficient cutaneous blood-supply such as he mentions is met with in other forms of disease. As a general or local phenomenon it is found in all forms of "rheumatism," except acute rheumatic fever; in these disorders also a low mouth temperature is constantly found. It is permissible to assume that the hypopietic state is due to one or both of two causes: disturbance of medullary centres, or interference with the physics of the circulatory tubes. These main factors may in turn be influenced by a number of causes among which toxic bodies and local traumata may be found. Any measures productive of a quickened flow of blood and lymph and an elimination of waste bodies by the sweat glands must therefore be as beneficial in disorders of blood pressure as they are in disorders of the skeletal muscles and ligaments.

Pyretic treatment by Neyman's method of diathermy and the electric blanket has, however, certain disadvantages which militate against its

PANEL AND CONTRACT PRACTICE

Agenda of the Panel Conference

THE annual conference of local and medical panel committees will be held in London at the B.M.A. House on Thursday, Oct. 20th, and the elections for representatives to attend this conference will be taking place shortly. The conference discusses as its agenda the report of the Insurance Acts Committee 1931–32, which appeared in the supplement to the *British Medical Journal* of August 20th. Some of the items in this report deserve special attention.

CAPITATION FEES

A special subcommittee has been at work on this matter collecting figures of attendance, and opinions have been invited from practitioners and panel committees on aspects of their work other than the number of attendances. The present capitation fee was fixed in 1924 by a court of inquiry, and the object of this committee is to determine whether the amount then awarded is now considered to be adequate and, if not, the detailed reasons for such an opinion; also how and to what extent the content of the medical service under the Acts has increased since 1924. This is not quite so simple as it looks. To take an example: the injection treatment of varicose veins was not held in 1924 to be within the Act; now it is. This is held by some to mean more work for the same capitation fee; on the other hand it may mean less treatment of bad legs and varicose ulcers. A matter rather difficult to prove.

FEES FOR ANÆSTHETICS

The present position is that the I.A.C. by a small majority decided that anæsthetics should be included in the normal service, and that no special fees should be paid out of the central fund to the anæsthetist (frequently a partner or assistant) for this service. Some months ago as a result of pressure by the London panel committee the London insurance committee agreed to the principle that only 1*s.* should be allowed for any anæsthetic fee until regulations, which at present make some fee necessary, could be altered. The Ministry did not agree to this and await the opinion of the conference. It seems that in 2 areas of England and Wales the fee for a general anæsthetic is £2 2*s.*; in 9 areas it is £1 11*s.* 6*d.*; in 118 areas it is £1 1*s.*; and in 24 areas it is 10*s.* 6*d.* In none of the distribution schemes examined is provision for the payment of the anæsthetic fees absent, but in many areas panel committees refuse to grant applications for them.

LECTURES TO STUDENTS

Lectures to final-year students on health insurance practice are recommended by the I.A.C. as a means of improving the medical service. Little provision has been made for teaching the regulations in the medical schools of this country, the staff of which are often ignorant of the first principles of the Act. It is suggested that fees for these lectures should be paid for out of the interest on National Health Defence Trust capital. The conference last year suggested that these lectures should be given gratuitously by experienced men, but there is perhaps a limit to the amount of gratuitous work that can be demanded of practitioners even for one another. Lecture work to be effective can only be undertaken by men with experience of administrative work gained by service on panel and insurance committees. Such lectures should be paid for just as any other instruction on subjects within the medical curriculum by members of the staff of hospitals with medical schools attached.

THE MEDICAL CARD

There is apparently to be an alteration in the instructions printed on the medical card to prevent the present abuse by which insured persons moving into a new area wait until they are ill before changing their panel doctor for one living in the new neighbourhood. The wording is to be this :—

1. On receipt of this card if you have not chosen a doctor you should at once choose a doctor. You should fill up part A opposite and take the card to any insurance doctor you wish to choose.
2. If you remove permanently to a new address where you cannot get treatment from the doctor you have chosen, you can change to another doctor. You should at once fill up part B opposite and take the card to any insurance doctor you wish to choose.

Confidential Information

Staffordshire insurance committee has been considering a recommendation that practitioners on its list should be asked to furnish confidential information about the nature and duration of a patient's incapacity when requested to do so by approved societies in cases of difficulty. This was apparently agreed to and passed on to the medical benefit subcommittee for effective action (if any). The principle here involved seems to strike at the root of the normal relationship between doctor and patient. At the present time no doctor has the right to give information about a patient without that patient's consent to any third party, unless ordered to do so by a judge in court. This point has not, as far as we know, ever been raised in connexion with reports to regional medical officers where under regulations the doctor has to furnish information about a patient's condition to an officer of the Ministry. What would the position be if the patient refused his consent to such information being given? One of the present-day difficulties in certification is the absence of local control. In the old days every member was interested in his club, and if a member did not play the game the others soon saw to it that his incapacity was not worth while. In the national scheme there is no such protection for the funds of approved societies. Members and agents vie with one another to obtain benefits.

Panel Chemists

The terms of service for chemists under the N.H.I. Acts have been revised and the *Pharmaceutical Journal* for Sept. 3rd published some correspondence on the matter between the Ministry of Health and the National Pharmaceutical Union. The Ministry consider that Clause 4 (4) of the existing terms need no longer be retained as a safeguard against insurance prescriptions being asked for and issued merely for the sake of inducement in cash or kind held out by a chemist to insured persons. There has been no evidence of such practices since 1927. It is considered improbable that requests to doctors for medicine in excess of what is reasonably necessary will be made and granted for the sole purpose of securing increased dividends from coöperative societies. With regard to remuneration the negotiations are not quite finished. The Minister thinks that the excess of remuneration in 1930 and 1931 over the maximum amount guaranteed was more than can be justified if similar results are to be anticipated in the future. Some limitation is therefore necessary in the public interest, the first suggestion being to abandon continued experiments with rats that it is less likely than ergosterol or irradiation to produce a mineral imbalance that results in calcification of the organs. Hellwig has shown (*Arch. Pathol.*, April, 1931) that an excess of calcium induces goitre in rats. Perhaps some of the virtue of irradiated ergosterol in rickets lies in its activation of the thyroid as well as in its liberation of calcium from storage to be deposited in the bones. In a series of papers, preliminary abstracts of which have already appeared, we expect to furnish considerable information regarding the rôle of the balance between iodine and unsaturated hydrocarbons and fats in several deficiencies now classed as avitaminoses.

I am, Sir, yours faithfully,

F. E. CHIDESTER.

West Virginia University, Morgantown, West Virginia, August 29th, 1932.

MEDICAL NEWS

Royal Faculty of Physicians and Surgeons of Glasgow

At the close of the meeting on Sept. 5th, Mr. Walter Hurst, J.P., F.L.A., who had recently retired from the position of secretary to the Faculty, was presented by the President, Dr. R. Barclay Ness, on behalf of the Fellows, with a bureau and wallet with cheque, as a mark of appreciation of his work, extending over 25 years. Mr. Hurst took a keen interest in the success of the library, becoming familiar to a remarkable degree with its 120,000 volumes. As acting librarian he was able to help those whose work led them to dig deep in its literary treasures.

West London Hospital Post-Graduate College

The winter session begins on Oct. 13th, when Sir William Hale-White will give the opening address, at 3.30 P.M., on Bacilluria.

St. George's Hospital Medical School

The annual prize distribution will be held at 3.0 P.M. on Saturday, Oct. 1st, when Dr. E. Kaye Le Fleming will give an address on the General Practitioner: his Relationship to the State, the Public, and his Profession.

The annual dinner will be held on the same evening at the Hyde Park Hotel, at 7.15 for 7.45 P.M., when the chair will be taken by Sir Crisp English.

Westminster Hospital

A post-graduate course in general medicine and surgery will be held from Sept. 19th to Oct. 1st for men graduates only, under the auspices of the Fellowship of Medicine. Lectures or demonstrations are given every morning from 10.30 A.M. to 12.30 P.M., and two or three every afternoon between 2 and 4.30 P.M. Further particulars can be obtained from the secretary of the Fellowship of Medicine, 1, Wimpole-street, London, W.1.

Royal Sanitary Institute

A meeting will be held on Sept. 30th, in the Guildhall, Portsmouth, when discussions will take place on Municipal Engineering Works in Portsmouth, to be opened by Mr. Joseph Parkin; and on the Public Health Service: a Retrospect and a Forecast, to be opened by Dr. A. B. Williamson; Dr. Charles Porter presiding.

Medical Society of Individual Psychology

The first meeting of the session will be held, under the chairmanship of Prof. W. Langdon Brown, on Oct. 13th, at 11, Chandos-street, London, W.1, at 8.30 P.M. In the absence of Dr. Adler, Dr. Leonhard Seif, of Munich, will give an address in English on the Individual and the Community. This lecture is free to medical practitioners. On Oct. 14th Dr. Seif will address doctors and educationalists in Birmingham on Educational Aspects of Individual Psychology, and on Oct. 15th he will address the York Medical Society on Individual Psychology and Neurosis. On Oct. 17th, 19th, and 21st, Dr. Seif will lecture, under the auspices of the Individual Psychology Committee, at the School of Hygiene and Tropical Medicine, Keppel-street, London, W.C.1, at 8.30 P.M. Lecture I. will be on the Tendency to Freedom from Conflict in Life and Neurosis; Lecture II. on Resentment and Revolt; and Lecture III. on Individual Psychology and a Philosophy of Life. These lectures will be open to the public at a small charge.

Presentation to a Medical Man

On his retirement from the post of senior surgeon at the Blackburn and East Lancashire Royal Infirmary, after 25 years' service, Mr. R. Y. Aitken has been presented with his portrait in oils. Lord Moynihan made the presentation on Sept. 1st.

National Maternity Hospital, Dublin

The corner-stone of the new buildings was laid on Sept. 7th by Dr. Wall, Bishop of Thasos. The building will cost some £220,000, and the expense will be mainly defrayed from the results of the sweepstakes. Hitherto, the work of the hospital has been conducted in two rather unsuitable houses in Holles-street, but the committee has now succeeded in obtaining a site with a frontage on Merrion-square.

Increased Hospital Fees at Bangor

The committee of management of the Carnarvonshire and Anglesey Infirmary have increased the scale of charges for patients. Hitherto the fee has been 12*s.* 6*d.* per week, but it is now to stand at a minimum of £1 1*s.* per week with a subscriber's recommendation, and a minimum of £1 11*s.* 6*d.* without a recommendation. Out-patients will be charged 6*d.* for each attendance, with consideration for cases in which the charge cannot be met. These increases are necessitated by the higher cost of maintenance.

Anti-War Congress: International Medical Committee

This committee, consisting of doctors from Amsterdam, Berlin, London, Paris, Prague, Vienna, and Zurich, met during the congress held at Amsterdam from August 27th to 29th, and drafted an "appeal against war." The appeal sets out statistics showing the casualties in all countries during the war, and draws attention to the increased morbidity which it brought in its train. The committee propose to collect and spread information on the catastrophic effects of war on the public health.

Irish Hospital Sweepstakes

The audited accounts of the Irish Hospital Sweepstake on this year's Derby, which were issued recently, show that the total receipts were £4,128,485, and that the amount payable to the hospitals was £516,080. The prize fund was £2,804,552; stamp duty absorbed £258,030, and a similar amount was taken by the Ministry for local government. The expenses were £291,812.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 3RD, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 10 (last week 13); scarlet fever, 1332; diphtheria, 710; enteric fever, 89; acute pneumonia (primary or influenzal), 413; puerperal fever, 27; puerperal pyrexia, 126; cerebro-spinal fever, 24; acute poliomyelitis, 29; acute polio-encephalitis, 3; encephalitis lethargica, 3; continued fever, 3; dysentery, 85; ophthalmia neonatorum, 90. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 6th–7th was as follows: Small-pox, 20 (last week 24); scarlet fever, 1095; diphtheria, 1253; enteric fever, 15; measles, 389; whooping-cough, 426; puerperal fever, 21 (plus 6 babies); encephalitis lethargica, 230; poliomyelitis, 4; "other diseases," 116. At St. Margaret's Hospital there were 15 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 11 (1) from measles, 2 (1) from scarlet fever, 19 (5) from whooping-cough, 24 (5) from diphtheria, 75 (18) from diarrhœa and enteritis under two years, and 13 (4) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa were 2 fewer than in the previous week: the highest figures being Liverpool, 11; Croydon and West Ham, each 4. The fatal cases of enteric fever occurred at Hastings and Grimsby. Three of the deaths from measles were reported from Liverpool. Diphtheria claimed 5 victims at Hull.

The number of stillbirths notified during the week was 252 (corresponding to a rate of 39 per 1000 total births), including 39 in London.

general use. Such treatment necessitates the undivided attention of the physician himself throughout its duration, and presupposes a docility on the part of the patient that cannot always be relied upon. Should accident or indiscipline produce a sudden alteration of current-strength, a burn or shock may occur. Wilde's thermal couch, dependent as it is upon low-pressure steam heating, and necessitating no pinioning of the patient in blankets, is free from these drawbacks, and its application can be safely left to a reliable nurse. With it a rise of mouth-temperature to 103° F. in 40 minutes is easily obtained, and 106° F. or higher may be reached after 60–90 minutes' treatment.

Such pyrexia is associated with profuse sweating but with no subjective feelings of distress and with no excessive rise of pulse-rate. Rates of 130 beats per minute are rare. In the case of the patient who is very ill, the treatment can be given by means of a portable apparatus, with equally satisfactory results. Should necessity arise, it can be terminated safely at any moment without risk of accidental damage. Such baths have been given without untoward effects in post-encephalitic parkinsonism and in early cases of G.P.I., and can be strongly recommended as a safe and simple method of applying artificial fever therapy.

I am, Sir, yours faithfully,
C. E. SUNDELL.

Queen Anne-street, Cavendish-square, W., Sept. 6th, 1932.

THE INNERVATION OF DENTINE

To the Editor of THE LANCET

SIR,—In an annotation in THE LANCET of August 20th (p. 408), on the important investigations of O. W. Tiegs into the innervation of the dentine, the following statement in regard to my work on this subject occurs :

> "He (D. Stewart) severed the inferior dental nerve in a cat on one side and later compared the pulps of the teeth with those of the opposite side. He found that histologically the fibres which Mummery had assumed to be nerve-fibres showed no difference in their staining reactions from those on the normal side ; he concluded that if they were nerve-fibres some change would be visible and that they must therefore be connective tissue fibres. But this work, significant though it be, does not take into account the possibility of some nerve-supply through the sympathetic fibres accompanying the blood-vessels."

Might I be allowed to say that in a later paper (*Jour. of Anatomy,* 1928, lxiii., 1–6) I was able to show that the fibres of Mummery were still present after both the inferior dental nerve and the peri-arterial nerve plexus around the inferior dental artery had been divided.

I am, Sir, yours faithfully,
D. STEWART.

Department of Anatomy, the University,
Manchester, Sept. 7th, 1932.

THE LONDON CLINIC AND NURSING HOME

To the Editor of THE LANCET

SIR,—Representing the medical group by whose initiative the London Clinic and Nursing Home came into existence, we feel that it is our duty to make some statement regarding its present situation. The public announcement of the appointment of a receiver and manager of the affairs of the company must suggest to our profession and to the public generally that the undertaking has come to a premature end. Were this the case it would indeed be a national disaster, for the Home sets a new standard in the medical and surgical treatment of private patients.

It is true that the company has under-estimated the amount of capital required for the building, its equipment, and its working, and that arrangements for additional capital will have to be made. The appointment of the receiver and manager is, however, not a destructive measure, but a protective measure, designed to enable the work of the Home to be carried on until arrangements for the additional capital can be made.

The medical group is affording the receiver all the advice and assistance which its members can give towards achieving efficient and economical working. They have no doubt of the ultimate success of the undertaking, and they are satisfied that during the period of financial reorganisation the reception of patients and the working of the Home will be carried on to the complete satisfaction of everyone concerned.

We are, Sir, yours faithfully,
(Signed) H. MORELAND MCCREA,
G. LENTHAL CHEATLE,
WALTER HOWARTH,
H. S. SOUTTAR

Sept. 12th, 1932. (on behalf of the Harley-street group).

IODINE IN AVITAMINOSIS

To the Editor of THE LANCET

SIR,—In your issue of May 14th (p. 1031) Mr. L. J. Harris, D.Sc., has made several suggestions regarding the mode of action of vitamin D which we believe can be further amplified by a report of our recent studies on leg-weakness in fowls. The results of our investigation, which will be more fully reported in *Endocrinology* (Chidester, Ashworth, Ashworth and Wiles), would seem to indicate that the iodine of cod-liver oil has long been an unconsidered factor in the prevention and treatment of rickets. Not only did our group find that thyroid extract prevented the appearance of leg-weakness, but a clinical report furnished us by a poultryman indicates that iodine administration prevented and cured leg-weakness appearing in a flock that presumably was receiving an adequate supply of cod-liver oil supplemented by fish meal.

Our experiment was incidental to a study of the influence of anterior pituitary extract intravenously injected. Previous workers had found that under such conditions, after a period of three or four weeks, the thyroids were depleted in iodine. Some of our experimental animals treated for more than four months developed leg-weakness and "slipped tendon."

It is our belief from a consideration of chemical analyses of the pituitary gland' that we produced a high-phosphorus low-calcium rickets, and that we also drew upon the stored iodine in the thyroid. It occurred to the writer that since the *parathyroids* apparently have such a profound influence on calcium deposition, it might be possible that they function as reservoirs of iodine. The long overlooked investigation of Gley indicates that such is the case. It is our belief that other analysts found the reservoirs empty, and hence reported a low iodine content.

It has been shown by several workers that both inorganic and organic iodine will prolong the lives of rats which have had an excess of irradiated ergosterol. The fact that the writer and associates (Chidester, Eaton, Speicher, Bourne, and Wiles) have been able to point out the great significance of iodine in three other vitamins, and that he has shown that the vitamin-A potency of cod-liver oil destroyed by oxygenation at a temperature of 120° C. for 24 hours can apparently be restored by adding iodine, naturally suggests a reason for the failure of oxidised cod-liver oil in the control of rickets, as described by Wagner and Wimberger (THE LANCET, 1924, ii., 55), and by other workers since that time.

While cod-liver oil itself may be given in too large quantities, we have considerable evidence from long-as a sheep was killed for the use of the family, I should be stripped and swathed up in the skin, warm as it was flayed from the carcass of the animal. In this Tartar-like habiliment, I well remember lying upon the floor of the little parlour in the farmhouse, while my grandfather, a venerable old man with white hair, used every excitement to make me try to crawl." Dr. Hutchison notes that he himself has been consulted as to the efficacy of this treatment of infantile paralysis. At 12 Scott was thought to have outgrown his strength, and at 14 suffered from a mysterious disease, associated with bleeding "in the lower bowels." We are left to speculate on its origin since, as Dr. Hutchison points out, Scott was then too old for polypus; too young for hæmorrhoids; ulcerative colitis is almost unknown at that age; and the history does not suggest typhoid fever. Scott recovered, and remained in robust health for ten years; he then had the first of the attacks of biliary colic, which recurred for a period of three years, and were ultimately cured following the exhibition of small doses of calomel, in which Scott had immense faith ever after. Six years later he had a solitary attack of renal colic, and two or three years afterwards, in 1826, developed rheumatism. Even before this time, in 1822, he had written to Terry of being annoyed by "a whoreson thickness of blood," which, on the basis of his subsequent history, Dr. Hutchison interprets as meaning the onset of high blood pressure. Scott dreaded a stroke, and in the same letter remarked, "Peveril will, I fear, smell of the apoplexy." In the years which followed he had seizures of increasing severity, and in 1832 an attack of "apoplexy combined with paralysis" occurred while he was in Germany. His surgeon had instructed a "confidential domestic, privately, in the use of the lancet," and immediate bleeding at the hands of this servant is said to have restored the signs of animation after his final stroke. At any rate, he was able to reach his home at Abbotsford, and it was several months before he died there on Sept. 21st, 1832.

EPIDEMIC DISEASE IN THE SUDAN

BILHARZIASIS is causing anxiety in the Blue Nile province. In his annual report as director of the Sudan medical service, Dr. O. F. H. Atkey tells us that in spite of a special effort to diminish the infection, which is endemic to certain blocks of the irrigated area, an increase in the number of children infected during the year has been recorded. The infection-rate among local natives has increased from 0·2 per cent. in 1930 to 0·75 per cent. in 1931. Snail destruction was not attempted throughout the irrigated area but was limited to canals in areas where the disease was endemic; these canals were treated with molluscicide in May and again in July, with the result that snails did not reappear until November, so that the new cases were presumably infected before May. The problem of prevention is complicated by the immigration of natives of western origin from Kordofan, Darfur, Wadai, and West Africa; in spite of a careful organisation to quarantine and treat such immigrants a considerable number of infected labourers find their way into the irrigated area. They are difficult to control, dirty, ignorant, irresponsive to propaganda, and disobedient to regulations, and are the main factor in the infection of canals. The best chance of sanitary improvement appears to lie in village planning and the establishment of public latrines. Up to date no effective action has been taken to provide latrine accommodation for the villages; their provision would not only prevent contamination of the canals, but would diminish the incidence of dysentery and other fly-borne diseases. "The present poverty of the people and the financial difficulties of the government," Dr. Atkey says, "combine to hinder the execution of these very necessary sanitary improvements." The infection-rate among women and girls is lower than among men, which is fortunate, as they are less ready to seek examination and treatment.

Relapsing fever has remained epidemic in the Blue Nile province and Khartoum province, and two outbreaks occurred in Darfur province which were attributed to immigrants from French territory. The case-mortality in the Blue Nile province was 13·4 per cent., as compared with 11·9 per cent. in 1930. Measures to prevent spread included passenger control in public vehicles; propaganda setting out the danger of associating with Western immigrants, and the value of early notification, bathing, shaving, and delousing of all clothes, bedsteads, and household goods. Outbreaks were dealt with by removing the sick to hospital, disinfection of their huts, and the shaving, bathing, delousing and medication of contacts. Contacts left in the field were given grey oil intramuscularly and marked on a finger-nail with a silver nitrate pencil. Of over 200 contacts so marked and left in the field, only one was subsequently admitted to hospital with relapsing fever, but others may have developed the disease who failed to report themselves as cases. A further 281 contacts were divided into four groups, those in three groups being treated respectively with tartar emetic, novarsenobillon, and grey oil; those in the fourth group, serving as controls, were not treated. Tartar emetic had to be dispensed with early as the injections were unpopular and the patients ran away. The results obtained indicated that antimony and arsenic prophylaxis increased the incidence of the disease among contacts, while grey oil reduced it, but the series was not sufficiently large for definite conclusions to be drawn.

The same three remedies were employed in the treatment of 492 cases of infection, which were divided into three groups for the purpose. Tartar emetic was again early discontinued owing to the high mortality under this treatment in 1930, and its unpopularity with the patients. The results indicated that grey oil was more effective than novarsenobillon in the treatment of relapsing fever, the case-mortality with novarsenobillon being 12·4 per cent., and with grey oil 11·9 per cent.

THE DEAVER MEMORIAL FUND

THE recent establishment by the Aid Association of the Philadelphia county medical society of a John B. Deaver perpetual memorial fund, the income from which is to be devoted to assisting needy physicians and their families, recalls the striking figure of one who at the time of his death a year ago was among the best known of American surgeons. Deaver came in touch with British surgeons at Oxford in 1904, when he read, before the British Medical Association, an important paper on hepatic drainage, which attracted considerable attention; and they reciprocated by regular visits to his clinic. Many went to witness his operative dexterity; even at an advanced age he was quick and spectacular. Many went to be entertained, for he had a gift of dramatic expression and his experience was exceptionally large. His literary output was considerable, with a pleasing style and a historical undercurrent which relieved the scientific exposition. His works on the breast, the prostate, and on appendicitis have become classics.

Born in 1855, near Buck, Pennsylvania, the son of a doctor, Deaver graduated in the University of Pennsylvania, and began private practice in Philadelphia. In 1884 he became demonstrator of anatomy, succeeded Joseph Leidy as assistant professor of applied anatomy seven years later, and in 1911 was appointed professor of surgery. From 1886 until his death on Sept. 25th, 1931, from severe secondary anæmia, he was attached as chief surgeon to the German Hospital at Philadelphia, since the war rechristened the Lankenau Hospital. His honours were numerous, and included the presidency of the American College of Surgeons in 1921. Though hundreds of active surgeons were his students, Deaver failed in one respect to achieve immortality, for his was a "one-man show"; he trained no disciples. The Deaver fund will, however, keep green the memory of a remarkable personality.

NOTES, COMMENTS, AND ABSTRACTS

THE PLACE OF THE MIDWIFE IN A NATIONAL MATERNITY SCHEME

FOLLOWING the issue of the final report of the departmental committee on maternal mortality and morbidity, the Midwives' Institute has put forward some suggestions designed to safeguard the position of midwives in a national maternity scheme. Any such scheme, in the view of the Institute, should cover the provision in every case of the services of a qualified midwife, chosen by the patient, to act either as a midwife, or, where the case is booked by a doctor, as a maternity nurse. The freedom of choice granted to the mother under the National Insurance Act should be maintained. When a midwife is available to act either as a midwife or as a maternity nurse at all confinements, the handywoman will take her rightful place as domestic assistant—i.e., home help. It is held that a scheme should provide for at least one medical antenatal and postnatal examination by the doctor, and should include cases of abortion. Sufficient hospital accommodation for abnormal cases should be included and should be reserved for such cases except when the home conditions are undesirable, or when the patient is prepared to pay full cost for hospital accommodation. It is submitted that any scheme should cover ambulance facilities for patients requiring to be removed to hospital, and telephone facilities for midwives, and that all midwives at present in practice should be included, if they so desire.

Other suggestions include the thorough instruction of midwives in the use of sedative and other drugs in obstetric practice as laid down by the rules of the Central Midwives' Board, no obstacles being placed by local authorities in the way of midwives using such drugs provided they understand their use and application. The need for more adequate attention by the midwife to important nursing duties than is possible under present conditions is emphasised; the departmental committee recommend in normal cases, morning and evening visits for the first three days, one visit thereafter up to and including the tenth day, and single visits on at least the twelfth and fourteenth days, where possible. Attention which includes such services might, it is held, justify an inclusive fee of three guineas per case, which could be considered the average standard. Attention is drawn to the financial disabilities under which midwives and especially those in independent practice are working to-day, and to the extent to which they suffer from bad debts or part payment. It is suggested that midwives in any district should meet and decide on a fair fee for the district and agree not to undercut each other, the local authority being approached to pay this agreed fee in necessitous cases.

The view is expressed that while consultant antenatal clinics are essential, the present increase of local antenatal clinics—where the doctor in attendance is neither a specialist nor the doctor the midwife could call in at the confinement—is unnecessary and expensive, both in money and in officers' time; necessary instruction in mothercraft, hygiene, and the making of clothes could be given to both expectant and nursing mothers at classes in connexion with existing infant welfare clinics. The claim of the midwife to representation on local committees, to compensation during suspension from work on grounds of infection or on admission of a booked patient to hospital, and to provision for old age is clearly set out. The document is a reasoned presentation of the midwife's aspirations, most of which will be recognised as legitimate, though the inclusive fee suggested will startle those who do not realise how much time must be devoted to maternity nursing if the mothers of the country are to have the best chance to regain and maintain their health and working capacity after childbirth.

In making these recommendations with regard to a National Maternity Scheme, it has been assumed that the necessary funds would be obtained mainly through insurance and in necessitous cases provided by the local authority.

DRUGS AND THE OTTAWA CONFERENCE

IT is understood that the British delegates pledged the British Government to place more and new duties on foreign imports of certain drugs, notably cod-liver oil, honey, and linseed. The proposed increase in the duty on honey is small, and the Empire could probably supply this country with all the honey it needs, so that an additional duty on foreign honey should not cause any marked increase in the price of honey. The suggested import duty on foreign linseed has evoked criticism, inasmuch as the bulk of this country's supply of linseed comes from South America, and it is said that India, the other source of supply, could not, for many years, supply all our requirements. What is being said in the markets about honey and linseed, however, is hardly audible above the noise that is being made about the proposed increase in the duty on foreign cod-liver oil. The proposal, so it is persistently but not officially reported, is for an additional duty of 1*s*. 4*d*. per gallon on imports of foreign, that is to say Norwegian cod-liver oil. This oil is already subject to a 10 per cent. ad valorem duty, and the effect of the increase would be to add about 40 per cent. to the wholesale price of practically all the cod-liver consumed in this country, thereby putting a strain on the insurance drug fund. Nearly all the Newfoundland cod-liver oil produced is, we understand, consumed in the United States of America, and this country depends on Norway as its main source of supply. That being so it would be a pity if the public had to pay much more for its cod-liver oil.

THE MEDICAL HISTORY OF SIR WALTER SCOTT

"A DOCTOR is like Ajax—give him light and he ma make battle with disease; but, no disparagement t the Esculapian art, they are bad guessers." Sir Walte Scott should have been a judge of doctors, for hi physical infirmities brought him into repeated contac with the profession which he thus temperatel criticised. Certainly he had to suffer, on occasion, fo the bad guesses of his physicians. Dr. Rober Hutchison, in a graphic account of the medical histor of Scott contributed to a recent symposium,[1] quotes letter written to Southey in 1819, when Scott ha been subjected to the contemporary treatment fo biliary colic: "If I had not the strength of a team o horses I could never have fought through it, an through the heavy fire of medical artillery, scarce les exhausting—for bleeding, blistering, calomel an ipecacuanha have gone on without intermission whil varying the agony of the spasms, laudanum becam necessary in the most liberal doses, though inconsisten with the general treatment." In another place h speaks of being "bled and blistered till I scarcely ha a pulse left." He seems to have been tolerant of th treatment meted out to him, however, and to hav submitted obediently, in spite of his contempt fo drugs and his shrewd opinion of certain medica caprices. Scott certainly suffered from a distressin variety of ailments. Dr. Hutchison takes us throug the whole gamut of them. At 18 months Scott fell victim to the attack of poliomyelitis which was to mak him lame for life; as a result of this he was subjecte to the remedies suggested by other "bad guessers besides those in the medical profession. "Amon the odd remedies," he says, "recurred to aid m lameness, someone had recommended that so ofte

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[1] Edinburgh Med. Jour., 1932, xxxix., 461.

ADDRESSES AND ORIGINAL ARTICLES

ERRORS IN DIAGNOSIS*

BY ADOLPHE ABRAHAMS, O.B.E., M.D. CAMB., F.R.C.P. LOND.

PHYSICIAN TO OUT-PATIENTS, WESTMINSTER HOSPITAL; PHYSICIAN, THE HAMPSTEAD GENERAL HOSPITAL

A LECTURER who chooses this not unfamiliar subject is inevitably upon the horns of a dilemma. On the one hand it demands almost superhuman courage to select material from his own humiliating experiences, and with the best of intentions it is only human nature to develop amblyopia and deafness in respect to one's own deficiences. On the other hand, the more comfortable method of enumerating the mistakes of others carries with it an unworthy sense of triumphant condemnation as well as the implication of personal infallibility.

Nearly twenty years ago I composed a paper on the material derived from a series of lectures, 34 in number, delivered by distinguished consultants and specialists, each of whom dealt with the common mistakes which he had encountered in his own specialty, almost invariably, I may add, at the hands of somebody else. At that time I analysed and synthesised the impressions acquired from these lectures, and produced what I felt justified in calling "Common Errors in Diagnosis." But it is not a good title. A common error in one man's opinion is a most uncommon one in another's. The criterion of difficulty is an arbitrary elastic one, and it is better to avoid any such qualification and consider the subject as a whole.

THE CAUSES OF MISTAKES

In the classification of the causes of mistakes in diagnosis there is scope for ingenuity and resource. You may differentiate mistakes as pardonable and unpardonable. Or you may classify them under the two headings—things which we miss altogether, and things which we mistake for others. Or as negative errors—i.e., overlooking signs which are present—and positive errors, the discovery of mares' nests, exaggeration of the negligible, or inability to recognise the limits of the normal. Or, again, as mistakes arising from the incomplete observation of facts, and those which are conclusions drawn from inadequate evidence. These classifications overlap, and are to some extent tautologous; but before concluding this enumeration of possible classifications one is reminded of the perpetrations traceable to such inborn errors of character as apathy, indifference, carelessness, and conceit. Osler said that the physician, like the Christian, has three great foes: ignorance, which is sin; apathy, which is the world; and vice, which is the devil. Vice will comprise nearly all causes of serious mistakes in diagnosis, if under vice we include failing to take sufficient care.

The first possible cause of faulty diagnosis is that which may occur before the patient is seen, when judgment is unalterably warped by some prepossession or inculcated prejudice. The method of avoidance is obvious, if not always easy. Another cause may be as summarily dismissed: mistakes which arise from bad manners, tactlessness, or mismanagement. Here there underlies a fundamental mistake—that the doctor has mistaken his vocation. Most mistakes in the diagnosis of gastro-intestinal diseases and disorders are due to inadequate or imperfect handling of the patient during the preliminary interrogation. The anamnesis may be invaluable; it is often indispensable to a correct diagnosis; but in certain instances the rôle of cross-examination is negligible. In the attempt to obtain corroborative evidence from a patient it requires some tact and much patience to decide between useful information and garrulous imbecility. The manner of the interrogator makes all the difference in the world to the nervous or suspicious patient, who feels that his sentiments are being palpated, and his conscience auscultated long before the physical examination begins.

In this connexion it may be added how great a mistake it is to say too much too soon. Once the diagnosis is out of the doctor's mouth he is certain to be overwhelmed with questions about the probable course and duration of the illness. And until his diagnosis is as reasonably certain as any diagnosis can be certain, it is far better to refrain from any unqualified opinion. Even to name a disease or condition may be fraught with disaster. Armed with this, the patient or a relative proceeds to look it up, and so learns all the horrors which may be expected in the way of possible complications and termination. Some doctors take a pride in dispensing all available information to their patients on the principle that they have a right to know, quite independently of the patients' ability to understand the technicalities in their proper proportions, or of their own ability to describe lucidly and simply. Others go to the other extreme of pontifical profundity clothed in absolute silence. Doubtless there is, as usual, a happy mean. I am not at all sure that the over-cautious man who acquires a reputation as an alarmist is not criticised for his mistakes more sharply than his cheery breezy opposite, who seems congenitally incapable of ever imagining the existence of a grave disease. After all what, in the majority of cases, the patient and his friends are concerned about is not the academic beauties of differential diagnosis, but whether and how soon he is going to recover. They are not in the least interested in the doctor's impressions of structural changes in the organs affected, and they cannot possibly share his solicitude. They want his opinion upon the possibility of repairing the damaged machine, or, alternatively, upon the prospects of its continuing to run in its irreparable state. The uncertainty in regard to such questions makes a cautious answer imperative. For diagnosis is but the balance of probabilities, and often we are seduced into making a diagnosis before the pendulum has stopped swinging. A revision upon more mature consideration and further investigation may completely alter the prognosis, a volte-face which will never be understood and rarely forgiven. Occasionally, of course, the physician with a wrong diagnosis arrives at a correct prognosis or, as it is popularly said, he gains on the swings what he loses on the roundabouts; but such good fortune is too rare to be counted upon.

Mistakes due to Ignorance

To turn now to the classification of the causes of errors of diagnosis on clinical grounds, first there is ignorance. Ignorance is always relative. For purposes of discussion I would distinguish gross, moderate, and condonable ignorance. Gross ignorance is naturally very rare, but occasionally one encounters examples which leave a sense of wonder that the

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* A post-graduate lecture delivered at Westminster Hospital on Sept. 20th.

THE EFFICIENT HOSPITAL PHARMACOPŒIA

AT Aberdeen, on Sept. 13th, Mr. Herbert Skinner addressed the British Pharmaceutical Conference on the Hospital Pharmaceutical Service. It was, he said, the first time a practising pharmaceutist in hospital service had been chosen chairman of the conference. Although, he went on, the compounding of medicaments was neither the beginning nor the end of hospital pharmacy, yet the pharmaceutist required to be skilled in constructing formulæ to produce the best therapeutic effects, often from somewhat scanty information. The exigencies of the medical service make it a desirable thing, in this respect, that he should be of material assistance to the physician and surgeon. If the tendency to bank on known, admitted, and approved compounds was too marked, it gave opportunity to the novelty merchant to put across his elegant variations. Thus, quietly, for years hospital pharmacists had practised blending hypnotics with antipyretics to accentuate the hypnotic effect, and left it to external clinics to exploit the idea as a novelty. Their formulæ for ointments of known dermatological value were often tried out in foreign clinics, and returned to them disguised under a meaningless branded name. There was a real danger of getting into a rut, which the comparatively safe economic position in the public service had a tendency to encourage. "Pharmaceutically speaking," he said, "we lose the essence of things if we forget that the price of progress is eternal vigilance. The production of an efficient hospital pharmacopœia is our job."

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 19th, to SATURDAY, Sept. 24th.—WESTMINSTER HOSPITAL. Post-graduate course in general medicine and surgery. All day. Open to men graduates only.—INFANTS HOSPITAL, Vincent-square, S.W. Post-graduate course in diseases of Infants. Afternoons.—ROYAL EYE HOSPITAL, St. George's Circus, S.E. Course [illegible] noon. Clinical [illegible] HOSPITAL, Monk's O[illegible] Tues. and Fri. at 11 [illegible] logical Medicine. (Courses are open only to Members of the Fellowship.)

CENTRAL LONDON NOSE, THROAT, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Sept. 23rd.—4 P.M. Mr. W. A. Mill: Earache in the Normal Ear.

Vacancies

For further information refer to the advertisement columns

All Saints' Hospital, Austral-street, West-square, S.E.—Hon Anæsthetist.

Archway Hospital, Archway-road, Highgate, N.—Asst. M.O. £350.

Bangor, Caernarvonshire and Anglesey Infirmary.—Jun. H.S. £100.

Barnsley, Beckett Hospital and Dispensary.—Cas. O. £250.

Bath, Royal United Hospital.—H.P. At rate of £175.

Bethnal Green Hospital, Cambridge-road, E.—Two Asst. M.O.'s. £350.

Birmingham, St. Chad's Hospital.—Res. M.O. £100.

Cardiff Royal Infirmary.—Two H.S.'s to Special Depts. Each at rate of £50.

Central London Ophthalmic Hospital, Judd-street, W.C.—Asst. Surgeon.

Cheltenham General and Eye Hospital.—H.S. £300.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—Asst. M.O. At rate of £275. Also H.P. At rate of £100.

Colchester, Essex County Hospital.—Asst. H.S. £120.

Colchester, Royal Eastern Counties' Institution, &c.—Res. Asst. M.O. £350.

Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Asst. Radiologist for X Ray Dept. £100.

Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120.

Fareham, Hants, Knowle Mental Hospital.—Second Asst. M.O. £550.

Gloucester, Gloucestershire Royal Infirmary, &c.—H.S. At rate of £150.

Halifax [illegible] £150.

Hertford [illegible] t rate of £200.

Holborn [illegible] blic Vaccinator.

Hospital [illegible] *Ormond-street, W.C.*—H.P. and [illegible]

Ilford, E [illegible] Cas. H.S. £100.

Ipswich, [illegible] *Hospital.*—H.S. £120.

Lambeth [illegible] —Asst. M.O. £350.

Leaming [illegible] *Hospital.*—Res. H.S. and H.P. Each £165.

Liverpool, Alder Hey Children's Hospital.—Res. Asst. M.O. £200.

Liverpool, St. Paul's Eye Hospital, Oldhall-street.—H.S. At rate of £145.

Liverpool, Stanley Hospital.—H.S. At rate of £100.

London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.

Maternity Nursing Association, 63, Myddelton-square, E.C.—M.O. 1½ gns. per session.

Mile End Hospital, Bancroft-road, E.—Asst. M.O. £350.

Miller General Hospital, Greenwich-road, S.E.—Hon. Surgeon to Nose, Throat, and Ear Dept.

[illegible] Part-time Surg. Reg. £250.

[illegible] *for Sick Children.*—H.P. Sen. [illegible] ate of £100.

Oswestry, Shropshire Orthopædic Hospital, &c.—H.S. At rate of £200.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W. Res. M.O. At rate of £100.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. M.O. for Isolation Hospital, Hammersmith, W. £200.

Queen's Hospital for Children, Hackney-road, E.—Ophthalmic Surgeon.

Royal Eye Hospital, St. George's-circ[illegible] *S.E.*—Eighteen Clin. Assts. Pathologist, £100. Twelve [illegible] Dept. Each £80. Also Nine [illegible] Each £50.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. At rate of £150.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.

St. Albans and Mid-Herts Hospital and Dispensary, Church-crescent.—Res. H.S. £150.

St. Helens County Borough.—Asst. M.O.H. £600.

St. Helens Hospital.—H.S. £200.

St. Leonard's Hospital, Hoxton-street, N.—H.P. At rate of £80.

St. Mary Islington Hospital, Highgate Hill, N.—Asst. M.O. £250.

St. Pancras Hospital, Pancras-road, N.W.—Asst. M.O. £250.

Salford [illegible] Res. H.S.'s to Special Depts. Each [illegible]

Sheffield [illegible] Aural and Ophth. H.S. At rate [illegible]

South London Hospital for Women, Clapham-common, S.W.—H.P. and H.S. Each at rate of £100.

Stockport Infirmary.—H.P. £150.

Walsall General Hospital.—H.P. and Res. Asst. Pathologist. At rate of £150.

West Bromwich and District General Hospital.—Hon. Gynæcologist and Hon. Physician. Also Cas. H.S. £200.

West London Hos[illegible] —Hon. Anæsthetist. Also [illegible]

Winchester, Royal [illegible] -H.P. At rate of £125.

[illegible] *oss Hospital.*—Res. Asst. M.O. £200.

[illegible] *nary.*—Pathologist. £400.

[illegible] M.O. £175.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Glyn Ceiriog (Denbigh).

Births, Marriages, and Deaths

BIRTHS

RUDD.—On Sept. 7th, at a nursing home, the wife of Dr. A. S. Rudd, Park-road, Crouch End, N., of a son.

WILLIAMS.—On August 27th, the wife of H. Keith Williams, *M.C.*, M.B., B.S. Lond., Attwood House, Basingstoke, of a daughter.

WOODHOUSE.—On August 29th, at South-street, Romford, the wife of R. A. Woodhouse, M.D. Camb., of a son.

MARRIAGES

DUNCAN—FINCH.—On Saturday, Sept. 10th, at St. Thomas's Church, Purston, John Duncan, M.B., Ch.B., elder son of Mr. and Mrs. Duncan, of Roundhay, Leeds, to Helen Maud, younger daughter of Dr. W. S. and Mrs. Finch, Purston, Pontefract, Yorks.

DEATHS

DINGLE.—On Sept. 7th, at "Strathmore," Ilfracombe, William Alfred Dingle, M.D., T.D., formerly of Finsbury-square, E.C., aged 82.

HOPKINS.—On Sept. 7th, at a nursing home, John Hopkins, F.R.C.S.

STEVENSON.—On Sept. 12th, at New Barnet, Herts, Thomas Henry Craig Stevenson, C.B.E., M.D.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

he upper end of the rectum may in itself give rise o very few symptoms, but by pressure cause hæmorhoids. Recently I correctly diagnosed gall-stones n a woman with characteristic symptoms, but overlooked a carcinoma of the stomach discovered at operation for the other condition.

Failure to Think Anatomically

It was C. B. Lockwood, always to be gratefully remembered by his pupils as a remarkable clinical teacher, who perpetually emphasised the importance of thinking anatomically. I recall the simplicity, yet the almost uncanny skill, with which the source for dysphagia was isolated in an inflamed gland beneath the sternomastoid muscle as he proceeded down the route of deglutition from the tongue itself. Reflex phenomena—e.g., otalgia from carious teeth, cough or hiccup of aural origin, abdominal pain in a child due to spinal caries, or in an adult to cardiac disease, these are a few obvious and commonplace examples of applied anatomy, examples which might be indefinitely multiplied. A recent experience is worth recording. A girl of 17 was exhibited to a number of experienced physicians and surgeons, all of whom diagnosed bilateral parotid tumour, and discoursed exhaustively on the possible causes of such tumours, until a final contributor to the discussion pointed out that anatomically considered the swellings could not possibly be of the parotid glands, that an entirely different explanation must therefore be forthcoming, and that the tumours were in fact lipomata.

Incomplete Examination

It is no exaggeration to protest that nearly all avoidable mistakes can be included in this category. How many really important mistakes would be avoided if we made it an invariable rule to examine at least perfunctorily from head to foot, including urinalysis and the use of the ophthalmoscope, the clinical thermometer, the hæmoglobinometer, and the sphygmomanometer? The range of examination may be indefinitely extended, but I suggest this as a kind of irreducible minimum which would act as a net, coarse enough to be of practical application, yet fine enough to retain the greater bulk of morbid conditions generally encountered.

Many grave errors result from simple neglect to take the temperature, and, one may add, to take it properly. Headache and seediness exact much more respect if fever is found to be present. Pain in the side may be neuralgia or muscular rheumatism or indigestion or some other trifle, but accompanied by a raised temperature at once suggests the possibility of pleurisy, splenic infarct, or other grave condition. Whilst the association of pyrexia with abdominal pain at once labels the complaint as serious, demanding an order for bed and further searching examination.

The thermometer may supply a warning that the course of an illness which has been correctly diagnosed is not proceeding normally—e.g., in pneumonia the development of an empyema; in rheumatic fever the onset of pericarditis or endocarditis. Or it may indicate the development of some complication in an illness in which the usual course is apyrexial.

What are the causes of incomplete examination? First of all, because there is no time, owing to extreme pressure of work, for more than what a photographer would term a snapshot diagnosis. Utterly unpardonable is the diagnosis made upon the patient's symptomatic description without examining the part. How many times has "rheumatism" been let out of a swelling with a scalpel? In my own experience I have seen sarcoma, osteomyelitis, popliteal aneurysm, and acute epiphysitis masquerading under this popular ready-made diagnosis.

Whatever the complaint, and however preposterous the symptomatology, the region complained of must at least be looked at and undergo at least a cursory examination secundum artem. Neglect of this fundamental can admit of no defence. During the war I saw two R.A.M.C. officers suffer the most severe reprimand for stigmatising a man as a malingerer, and neglecting to examine him for his chronic backache. He had a huge aortic aneurysm visible at a distance of several yards. Undue reliance upon a symptom or physical sign often encourages neglect of further examination. I may instance a patient treated for 12 months for "cystitis." The abdomen had never been examined or a large tumour infiltrating the bladder would have been discovered. As another example œdema of the feet in a man attributed to anæmia. He had anæmia, it is true; in any case a most unsatisfactory explanation of œdema, but the anæmia was due to secondary malignant glands pressing upon the inferior vena cava, the primary source of which was a large painless tumour of the testis. The coexistence of glycosuria with a wasted leg was diagnosed as diabetic neuritis and protracted anti-diabetic treatment was ordered. It had not been observed, however, that the knee-jerk was brisk, and that the hip was fixed. It was, in fact, a case of old tuberculous arthritis, and the glycosuria was a transient accompaniment of hyperthyroidism.

Alternatively it sometimes happens that in a very obscure case there is an undue tendency to presume the importance of some positive discovery simply because one is happy to find anything positive. In this respect one thinks of the ubiquitous Wassermann reaction or of a bacilluria which, though merely a saphrophytic association, distracts attention from the deep-seated more elusive lesion which is really responsible for the illness.

ACCEPTANCE OF AUTHORITY

Incomplete examination may arise from a blind acceptance of somebody else's authority. Here one treads upon very thin ice. Naturally, to appear to cast doubt upon the value of a colleague's observations by repeating his examinations is liable to give offence, yet the unquestioned acceptance of his results may lead to disaster.

Inexplicable high or low blood pressures lose their mystery when it is evident that the apparatus must have been inaccurate. Absent tendon-jerks which have puzzled one observer and confuse the issue are found to be really brisk if a patellar hammer be employed. On one never-to-be-forgotten occasion I refrained from a digital examination of the rectum because I had been assured that a very eminent predecessor had only 24 hours previously passed this as normal. On the following day a third less confiding examiner humiliated me by finding an obvious growth within easy access.

In the matter of physical signs, however great the authority of previous examiners, one's own individual judgment should be formed. I feel that none of us ought ever to be offended at the scrutiny of our observations. If we are right we shall be confirmed; if we are wrong it is best to be corrected; and if it is a matter of interpretation difference of opinion is legitimate.

portals of qualification could ever have been passed. I was once asked to see a condition of "acute metritis" four days after delivery, when the large pyriform swelling in the abdomen was the bladder containing half a gallon of urine. And to forget that wax in the ears is a common cause of deafness might be included in this category.

Ignorance of the fundamentals, though not so extreme as to be labelled gross ignorance, is the diagnosis of articular rheumatism before the age of two, when scurvy or acute epiphysitis is overlooked. Ignorance of the symptoms and physical signs of early phthisis because apical dullness is not present. The popular identification of certain substances in the motions of infants as food residues, which are really insoluble soaps. Ignorance in the proper use of drugs, especially of those with a specific action—salicylates in rheumatism, quinine in malaria, urotropin in bacilluria, digitalis in auricular fibrillation; these are examples of drugs with a diagnostic value. One encounters instances when a diagnosis has been abandoned because the specific action of the drug has not been obtained, although quite inadequate doses have been administered.

As condonable ignorance I would refer to the want of acquaintance with comparatively rare diseases. Occasionally the tyro makes a brilliant diagnosis through his very ignorance of how rare such a condition is. In this category I am particularly thinking of what we term new diseases, with the somewhat disquieting reflection that they must hitherto have been there all the time and overlooked. Consider, for example, the fever due to the *Brucella abortus*; the disease, psittacosis; the syndrome known under the name of Plummer-Vinson; and the microcytic anæmias of women which Witts has made so familiar. I remember some 18 years ago being introduced to what the demonstrator described as the rarest disease in the world—congenital familial steatorrhœa. On the very next afternoon the first patient to enter my room was an example of this disease, of which until the previous day I had never heard. According to one's opportunity to keep au courant with medical literature, the failure to identify relatively rare diseases is more or less condonable. But on the whole we do not worry over such failures; rather the opposite is to be deprecated, the mistake of too frequently expecting or identifying the rare and unusual.

Inexperience or Faulty Judgment

These are only with some artificiality separated from the preceding. Perhaps as an instance of a distinction relating to inexperience one may cite mistakes arising from inability to judge cardiac and, a fortiori, pulmonary sounds at their proper value when the limits of the normal can be estimated only after prolonged experience. Most of us have seen instances of functional albuminuria treated for years as examples of nephritis. A reduplicated first sound is not always distinguished from a presystolic murmur, and unnecessary hardship in the way of restricting activities not avoided. An obstinate case of rheumatism localised to one joint may be treated as tuberculosis; a child who is merely deaf may be condemned as mentally defective.

I have already mentioned phthisis as an example of a disease which in its early stages may be overlooked through ignorance; somewhat similar mistakes attributable to inexperience may be multiplied in every branch of medicine. The least experienced can diagnose a case of disseminated sclerosis when all the classical signs and symptoms are so obvious that they can be recognised with a telescope from the end of a road. Trivial early signs quite insignificant to the novice will be identified by the man of experience. Varying degrees of experience with instruments of precision put us all into a number of grades and classes as the eye and ear are trained, as at one time I suppose the sense of smell was also used. Judgment in assessing the value of pathological and other evidence which is to be employed in establishing a diagnosis naturally demands profound experience of pathologists, their work, and the relation of their work to clinical medicine.

On the social side there is no limit to the judgment of human nature. The young doctor has to learn that pregnancy can never be excluded on a priori grounds of spinsterhood, separation, widowhood, social position, or the assertion that it is impossible. To overlook or wrongly to diagnose pregnancy i one of the mistakes which will never be forgiven.

Mistakes due to Obsession

It is no impertinence to submit that not even th most experienced can be entirely immune to thi cause of error. Whatever one's intentions, it is ofte impossible to avoid concentrating the attention upo a certain hypothesis and unconsciously distortin the circumstances to agree with it, whilst blindin oneself to other conditions which might have ensure revision of judgment. I once saw a class of l experienced general practitioners examining a swellin in the right iliac fossa. The demonstrator ha skilfully directed their attention to abdomina conditions, and restricted himself to their differentia diagnosis. As a consequence not one thought o examining the spine, which would at once hav revealed caries as a source of the swelling, a tuberculou abscess.

The specialist is naturally prone to dwell upon th particular features of his specialty, and only a goo general training can combat a perpetual tendenc towards this obsession and preserve a proper sens of values. Dr. Robert Hutchison quotes the exampl of a chest specialist unable to consider the usua causes of an ischio-rectal abscess because he had onc heard of or seen an empyema pointing in that situa tion! A dry throat considered as a local lesion ma be overlooked as an accompaniment of diabetes, laryngeal spasm as a manifestation of locomoto ataxia, a stuffy nose as an indication for thyroi extract.

An almost inevitable cause of obsession arises fro the traditional expectation of encountering a secon example of some relatively rare condition shortl after one has appeared, and this is associated wit the error of diagnosing on a general superfici resemblance to something recently seen. Apparentl no amount of persuasion to the contrary will destro the inclination to rely upon a supposed tendenc of rarities to run in couples, trios, or even group And although teachers of medicine are perpetuall pointing out the folly embodied in the second fallac no amount of experience appears to confer immunit After a particularly brilliant diagnosis, the observ is frequently incapable of forgetting his succes and, during this period of incapacity, judgment warped and the diagnostic field is thrown out focus.

As a rather special form of obsession there is th overlooking of the more serious of two simultaneou conditions. It is always advanced as a good gener principle to include all symptoms so far as possib under one cause, but this is not absolute. The le serious condition which is first observed natural attracts chief attention—e.g., malignant disease the upper end of the rectum may in itself give rise to very few symptoms, but by pressure cause hæmorrhoids. Recently I correctly diagnosed gall-stones in a woman with characteristic symptoms, but overlooked a carcinoma of the stomach discovered at operation for the other condition.

Failure to Think Anatomically

It was C. B. Lockwood, always to be gratefully remembered by his pupils as a remarkable clinical teacher, who perpetually emphasised the importance of thinking anatomically. I recall the simplicity, yet the almost uncanny skill, with which the source for dysphagia was isolated in an inflamed gland beneath the sternomastoid muscle as he proceeded down the route of deglutition from the tongue itself. Reflex phenomena—e.g., otalgia from carious teeth, cough or hiccup of aural origin, abdominal pain in a child due to spinal caries, or in an adult to cardiac disease, these are a few obvious and commonplace examples of applied anatomy, examples which might be indefinitely multiplied. A recent experience is worth recording. A girl of 17 was exhibited to a number of experienced physicians and surgeons, all of whom diagnosed bilateral parotid tumour, and discoursed exhaustively on the possible causes of such tumours, until a final contributor to the discussion pointed out that anatomically considered the swellings could not possibly be of the parotid glands, that an entirely different explanation must therefore be forthcoming, and that the tumours were in fact lipomata.

Incomplete Examination

It is no exaggeration to protest that nearly all avoidable mistakes can be included in this category. How many really important mistakes would be avoided if we made it an invariable rule to examine at least perfunctorily from head to foot, including urinalysis and the use of the ophthalmoscope, the clinical thermometer, the hæmoglobinometer, and the sphygmomanometer? The range of examination may be indefinitely extended, but I suggest this as a kind of irreducible minimum which would act as a net, coarse enough to be of practical application, yet fine enough to retain the greater bulk of morbid conditions generally encountered.

Many grave errors result from simple neglect to take the temperature, and, one may add, to take it properly. Headache and seediness exact much more respect if fever is found to be present. Pain in the side may be neuralgia or muscular rheumatism or indigestion or some other trifle, but accompanied by a raised temperature at once suggests the possibility of pleurisy, splenic infarct, or other grave condition. Whilst the association of pyrexia with abdominal pain at once labels the complaint as serious, demanding an order for bed and further searching examination.

The thermometer may supply a warning that the course of an illness which has been correctly diagnosed is not proceeding normally—e.g., in pneumonia the development of an empyema; in rheumatic fever the onset of pericarditis or endocarditis. Or it may indicate the development of some complication in an illness in which the usual course is apyrexial.

What are the causes of incomplete examination? First of all, because there is no time, owing to extreme pressure of work, for more than what a photographer would term a snapshot diagnosis. Utterly unpardonable is the diagnosis made upon the patient's symptomatic description without examining the part. How many times has "rheumatism" been let out of a swelling with a scalpel? In my own experience I have seen sarcoma, osteomyelitis, popliteal aneurysm, and acute epiphysitis masquerading under this popular ready-made diagnosis.

Whatever the complaint, and however preposterous the symptomatology, the region complained of must at least be looked at and undergo at least a cursory examination secundum artem. Neglect of this fundamental can admit of no defence. During the war I saw two R.A.M.C. officers suffer the most severe reprimand for stigmatising a man as a malingerer, and neglecting to examine him for his chronic backache. He had a huge aortic aneurysm visible at a distance of several yards. Undue reliance upon a symptom or physical sign often encourages neglect of further examination. I may instance a patient treated for 12 months for "cystitis." The abdomen had never been examined or a large tumour infiltrating the bladder would have been discovered. As another example œdema of the feet in a man attributed to anæmia. He had anæmia, it is true; in any case a most unsatisfactory explanation of œdema, but the anæmia was due to secondary malignant glands pressing upon the inferior vena cava, the primary source of which was a large painless tumour of the testis. The coexistence of glycosuria with a wasted leg was diagnosed as diabetic neuritis and protracted anti-diabetic treatment was ordered. It had not been observed, however, that the knee-jerk was brisk, and that the hip was fixed. It was, in fact, a case of old tuberculous arthritis, and the glycosuria was a transient accompaniment of hyperthyroidism.

Alternatively it sometimes happens that in a very obscure case there is an undue tendency to presume the importance of some positive discovery simply because one is happy to find anything positive. In this respect one thinks of the ubiquitous Wassermann reaction or of a bacilluria which, though merely a saphrophytic association, distracts attention from the deep-seated more elusive lesion which is really responsible for the illness.

ACCEPTANCE OF AUTHORITY

Incomplete examination may arise from a blind acceptance of somebody else's authority. Here one treads upon very thin ice. Naturally, to appear to cast doubt upon the value of a colleague's observations by repeating his examinations is liable to give offence, yet the unquestioned acceptance of his results may lead to disaster.

Inexplicable high or low blood pressures lose their mystery when it is evident that the apparatus must have been inaccurate. Absent tendon-jerks which have puzzled one observer and confuse the issue are found to be really brisk if a patellar hammer be employed. On one never-to-be-forgotten occasion I refrained from a digital examination of the rectum because I had been assured that a very eminent predecessor had only 24 hours previously passed this as normal. On the following day a third less confiding examiner humiliated me by finding an obvious growth within easy access.

In the matter of physical signs, however great the authority of previous examiners, one's own individual judgment should be formed. I feel that none of us ought ever to be offended at the scrutiny of our observations. If we are right we shall be confirmed; if we are wrong it is best to be corrected; and if it is a matter of interpretation difference of opinion is legitimate.

SUBORDINATION OF CLINICAL TO EXTRA CLINICAL METHODS

The invasion of pathology and radiology into the field of investigation is, of course, an infinitely progressive one. And it is perhaps inevitable, though unfortunate, that clinicians tend more and more to seek short cuts in diagnosis by invoking the assistance of one or other or both of these colleagues. Admittedly there are occasions when an absolute diagnosis is rapidly and unequivocably obtained by some pathological or radiological investigation. But the timid clinician is sometimes inclined too readily to distrust his own acumen and yield to the dogmatic pronouncements of film or slide which do not consort with his clinical impressions.

It is well to refer to the sources of error in such an attitude. In the first place, although the explanation cannot apply in many instances it is by no means unknown for the wrong radiogram or pathological report to be submitted, and no amount of precaution can ever entirely eliminate this possibility. Clerical errors may be responsible. I have seen the omission of a digit on two occasions with overwhelming consequence—a blood-urea examination, for example, returned as 24 mg. per cent. when 240 was intended. But putting these avoidable sources of error on one side, it must be admitted that pathologists and radiologists vary considerably both in skill of performance and of interpretation. I have seen the most serious consequences follow the return of a positive Wassermann reaction accepted at its face value, when other pathologists unhesitatingly returned a negative. Misleading reports as to infections, total and differential leucocyte counts, and agglutination tests have led to weeks of weary investigation resulting from the unquestioned acceptance of these results as excluding or indicating certain diseases.

Pathological results are often invaluable, they are generally valuable, they are sometimes embarrassing. They are to be used in their proper relation to diagnosis, and it is quite wrong to accept the ipse dixit of any pathologist, either as a substitute for clinical examination or as a negation of any clinical opinion with which it may not accord. And as regards the radiologist, improving technique shows how many mistakes have occurred in the past from faulty conclusions dependent on the angle of the rays or other technical causes, from the misinterpretation of the nature of an opaque body, or when the elaboration of special methods such as Graham's test, reveals errors which are not at first realised. To accept the dogmatic pronouncement that since there is no X ray evidence of cholecystitis or cancer of the stomach these conditions must be excluded is a dangerous source of error which most clinicians have had cause to deplore.

LAZINESS

As an easily avoidable cause of insufficient examination laziness must unhappily be included. Laziness has led to the employment of labour-saving apparatus. There is a preposterous instrument which promises that the chest may be auscultated without the preliminary precaution of removing the patient's clothes. It may possibly spare the physician the occasional disadvantage of the unattractive aroma of disrobing out-patient humanity. And it may easily lead to the diagnosis of all sorts of supposed pulmonary and pleural sounds which result from the creaking of a pair of leather braces. Furthermore, one can hardly encourage the handicap of endeavouring to hear slight modifications of the breath sounds
through a coat, waistcoat, shirt, three vests, and a
chest protector. It is just as well too to examine
the whole of the chest, and not restrict oneself to an
obviously abnormal part. I have twice seen early
tubercle of the right apex diagnosed because the note
at this apex was flatter and the breath sounds were
louder. But a pleural effusion at the left base had
been overlooked which had compressed the left lung
and caused hyper-resonance of the left apex. Thu
the not uncommon mistake of not recognising th
abnormal side of the chest might have been avoide
by complete examination.

Examination of the whole of the body is particularl
necessary when a rash is present. Toxæmia, sore
throat, and a rash may suggest an acute specific feve
until a full examination reveals an incompletel
healed sore on the penis and enlarged lymphati
glands. It is sometimes advanced as an excus
that the patient objected to some special examinatio
But if he cannot be convinced that the examinatio
is necessary his case had better be abandoned, for
is better to lose a patient than lose a reputation.

Unavoidable Mistakes

Our critics may inquire if any such exist. The
is certainly room for such a category. There a
occasions when, according to sound principles, y
are wrong, but right by mere chance; and, aft
all, we are judged by results. There are occasio
when mistakes are avoided by sheer good luck, a
occasions when mistakes occur on such relative
unimportant occasions that happily the only resu
is a determination never to make them again.

An old man was sent into hospital for sciatica
six weeks' duration. He had no sign of scia
neuritis, he was labelled neurotic, and was on t
eve of discharge with a somewhat uncomplimenta
diagnosis when an enterprising house physician ask
for a radiogram of the spine to exclude new growt
There was no new growth, but the radiogram reveal
an ununited fracture of the femur, and althou
there was clinically no evidence of a fracture, excepti
the pain of which he complained, and no history
any accident or injury which might be held respo
sible, had he been discharged and subsequent
investigated elsewhere there would have been
excuse for the error and no mercy for the perpetrato

There are some diseases and lesions with su
anomalous and contradictory signs that in th
diagnosis it would be wrong to be right. Take int
cranial tumours, for example, and let me quote
few mistakes admitted by a master of his art.
pineal tumour with no sign of genital hypertrophy
precocity. A tumour of the corpus callosum, un
companied by headache, vomiting, or optic neurit
regarded as a case of hysteria. Another in the corp
quadrigemina which ran to its termination witho
palsy of ocular movements, auditory disturbance,
cerebellar symptoms. One recalls the famous rebu
of Samuel Gee to a clinical clerk who had darin
assumed the existence of two symmetrical cent
abscesses in the fronto-parietal regions which auto
showed to be the actual lesion. "You were rig
you see, but—you had no business to be!"

INDUSTRIAL ACCIDENTS IN THE IRISH FREE STA
The report for 1931 under the Factories and Worksh
Act, recently issued, states that the number of accide
notified in the Irish Free State during the year was 7
as compared with 860 in 1930, and 1288 in 1929. Fa
accidents were 9 in number, compared with 12 and 23
the two preceding years. The largest number of accident
182, or 24·7 per cent.—occurred in the locomotive build
trade.

TESTS FOR RESPIRATORY EFFICIENCY

WITH SPECIAL REFERENCE TO THE MERCURY U-TUBE

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The need for some straightforward methods of estimating the degree of efficiency or failure of the respiratory apparatus has been expressed by many writers, dating from the first spirometric experiments of Jonathan Hutchinson.[1] Dyspnœa is essentially a subjective phenomenon, and from the rudimentary method of taking the number of pillows required for comfort as a guide to the degree of failure of the combined cardiovascular and respiratory systems to more complicated methods of testing the ventilation capacity, &c., clinicians and physiologists have sought to find some objective standards. The literature is strewn with suggested methods, mostly discarded for various reasons. In recent years a more urgent need for some way of estimating the state of efficiency of the respiratory apparatus has arisen in connexion with the development of thoracic surgery. R. A. Young,[2] in the Lumleian lectures for 1929, referred to various points with regard to the selection of patients for operations on the chest, and in 1930, at Winnipeg, he[3] spoke of the assessment of the patient's suitability and capacity. He referred to the high standard set by urological surgeons in respect to efficiency tests of the system with which they proposed to interfere, and expressed an opinion that there was scope for research into the measurement of respiratory efficiency. He suggested, for example, estimations of the vital capacity and tidal air and their relationship. The work here reported and other work in progress is an attempt to carry out such research.

Renal efficiency tests are performed as routine measures before major operations on any part of the genito-urinary system. Such tests are based upon physiological conceptions of the normal functional capacity of the system, and have also a more limited sphere of usefulness in connexion with general medicine and obstetrics. Respiratory efficiency tests have so far lamentably failed to give any but the slightest help to physicians or surgeons engaged in clinical problems. Not only would some means of estimating the degree of respiratory failure be of great value in patients before any surgical procedure was carried out on the lungs, but there would also be very valuable applications in other branches of medicine and surgery. Quantitive estimation of the progress in cardiovascular failure would be aided by such tests, while in the industrial field disability in cases of silicosis might be assessable by some such means. In treatises on the surgery of the lungs there is for the most part no mention whatever of any tests for respiratory efficiency. Morriston Davies[4] makes no mention of the possibility of such tests. Alexander,[5] in his monograph, speaks of the dangers in the early days of thoracoplasty operations when many patients died of acute respiratory insufficiency, but in his otherwise excellent account of pre-operative preparation he does not refer to investigation of the capacity of the patient's respiratory apparatus.

Various Types of Test

It is proposed in the first instance to discuss what tests are already available which have some basis on physiological conceptions. There are, firstly, various elementary points which can be determined on a routine clinical examination, such as respiratory rate, whether accessory muscles of respiration are in use, size of chest. degree of pathological lesion, together with blood counts, especially estimation of hæmoglobin, and possibly also determination of blood-gases in arterial and venous blood. Most of these methods of estimating respiratory efficiency are, of course, employed at the present time, and a judicial summing up of evidence thus afforded enables the trained clinician to reach a fairly satisfactory conclusion. It must be noted, however, that so many factors are concerned in producing deviations from the normal in any of these methods that results obtained are necessarily haphazard and in many instances quite unsatisfactory.

A second series of tests for respiratory efficiency are concerned with measurement of the vital capacity and its component parts. the tidal air, supplementary air, and complementary air. The advantage of such tests is that it requires very little training for a patient to be able to blow into a spirometer and exact figures are easily obtained as to the quantitative capacity of the lungs. The disadvantage of such tests lies in the difficulty of knowing the normal standards for individual patients. The formula devised by Dreyer,[6] for example, has been criticised by subsequent writers, and no measurement of the lung volume can be complete without a knowledge of the residual air, the estimation of which requires a more complicated proceeding not always applicable to the sick patient. The estimation of the "dead space" of the lungs is another possible method of arriving at an objective measurement of the degree of respiratory failure for, as Haldane[7] and others have emphasised, this "space" must be regarded as a physiological rather than as a strict anatomical conception. The estimation of lung volumes requires a satisfactory spirometer, preferably of the recording type, and for patients suffering from disease of the lungs it is essential that observations are not prolonged. Sampling of the alveolar air by any of the usual methods is generally very difficult with untrained subjects, and many of the results are unreliable unless the exact tidal air volume is known at the same time. Work on this aspect of the subject, where a ten-minute experimental period is used to obtain the vital capacity and, by means of sampling the alveolar air from the mouth-piece of the apparatus, figures from which the "dead space" can be calculated, is in progress and will be the subject of a future communication.

A third series of tests for respiratory efficiency are concerned with various "indices" devised principally to give some idea of the ventilating power of the respiratory apparatus. Some of these were discussed in two previous papers,[8, 9] where a new index, "the ventilation equivalent for oxygen," was described. Other possible methods in this group include the "dyspnœa ratio" of Hunt and Dufton,[10] the "factors" devised by Bazett[11] for testing the respiratory efficiency of air pilots, and, more recently, the "ventilation index" of Harrison and others.[12, 13] The advantage of such methods is that they provide a numerical statement of the degree of respiratory efficiency or failure, but the grave disadvantage is present for all of them that normal figures may provide a too rigid standard, and wide deviations

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* Working with a personal part-time grant from the Medical Research Council.

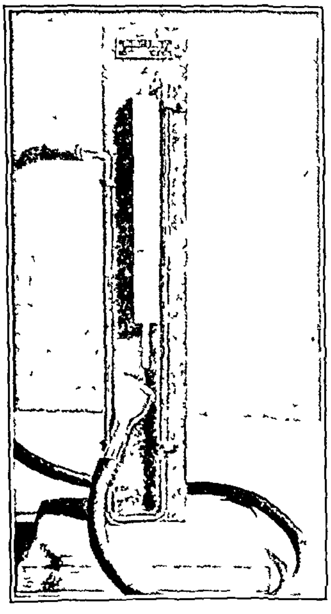
may be possible in health. Further, there is a danger that a figure calculated from some mathematical formula may be regarded as giving information which is not justifiably deducible from the original data. For example, in all discussions on the ventilating power of the lung there is always the need for correlating the actual ventilation to the body's requirements as regards oxygen intake and carbon dioxide output at that moment. The patient with diabetic coma will show a "ventilation equivalent for oxygen" many times the normal, but this is no indication that the respiratory apparatus is inefficient. It is necessary, however, to bear in mind these various formula to see whether, taken in conjunction with other data, they may prove of value.

Lastly come determinations of the expiratory force and sustaining power of the respiratory apparatus as tested with the mercury U-tube. This test, which has the great merit of simplicity, and is easy to apply to untrained subjects, was apparently first used by Stephen Hales,[14] who described in 1769 a method of measuring the force of respiration by means of an "inverted syphon" filled with mercury. The test has been used in modern times by various workers since its reintroduction by Flack[15, 16] for use in connexion with standards of respiratory efficiency for air pilots. It has been used for the investigations with which this paper is concerned, and its value will be discussed below in more detail.

Mercury U-tube Tests

The apparatus (Fig. 1) employed is a piece of stout capillary glass tubing with a bore of approximately 1·5 mm. in diameter. Each limb of the tube is 30 cm. long, joined by the lower ends to form a U-shape. The upper end of one limb is turned at a right angle to produce a side-piece about 3 cm. long, to which rubber pressure tubing 2 to 3 ft. in length is attached. Into the free end of this is inserted a glass mouth-piece consisting of a small funnel, flattened, with a small bar connecting the two flanges across the middle to prevent the subject from obstructing the opening with the tongue. The U-tube is mounted on a wooden frame, in the middle of which is fixed an adjustable scale reading in millimetres. The mouth-piece is kept hanging into a solution of lysol between each experiment, and is washed in water and dried immediately before use. Other requirements are a stop-watch and a nose-clip.

FIG. 1

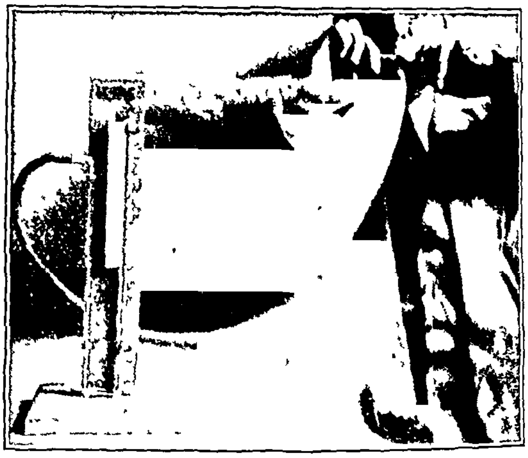


Flack's U-tube. Photo by the makers, Hawksley and Sons, London.

The subject is seated before a table on which the apparatus stands (Fig. 2). In the present investigation no attempt has been made to conceal the scale from the subject, who was invited to cooperate as heartily as possible in the proceedings. Two tests with the mercury U-tube were carried out following the instructions laid down in the pamphlet issued by the Air Ministry ("The Medical Examination fo Fitness for Flying"[17]). These instructions are a follows :—

"*Measurement of expiratory force.*—The subject i instructed to hold his lips round the mouth-piece with th thumb and forefinger of each hand, at the same time pressin against the cheeks. After drawing in a full inspiratio through the nose, he is told to blow the mercury *steadil as high as possible, strongly contracting* the abdomin muscles during the process. *On no account must the subje be allowed to swing the mercury up violently nor to persu in trying to force it up after it has started to fall.* The reaso for holding the cheeks is that it has been found that in som cases the mercury may be forced up to abnormal heights b the action of the cheek muscles. The number of mm H reached by the person's best efforts is recorded." (Italic in original.)

FIG. 2



The U-tube in use.

In the present experiment a preliminary "tria blow" to feel the weight of the mercury wa permitted, followed by three efforts, the best which was recorded.

The second test is carried out as follows :—

"*Endurance test (40 mm. mercury U-tube test).*—With th *nose clipped, the candidate is asked to empty* the lung completely, inhale fully, blow the mercury to the height 40 mm. and maintain it there without breathing as long a possible, the pulse being counted in periods of five second during the performance of the test."

The resting pulse was recorded at the beginnin of the preceding test for measuring the expirator force and again between the two tests, the paus being prolonged until the pulse-rate was the sam as at the beginning. Only one effort was allowed i this second test, as fatigue and repetition introduc complicating factors.

The subjects used in the investigation were draw from the casualty medical department of the Middlesex Hospital.† Only those patients with no obviou disease of the lungs or cardiovascular system wer used, and the various diseases from which the subjects for the test suffered included skin disorders arthritis, all forms of functional abdominal com plaints, neuralgia, sciatica, giddiness, and variou types of "nervous depression." The patient were invited "to have their lungs tested," an altogether 103 patients were examined, 39 men and 64 women, this sex difference being due entirely to the predominance of women at the out-patient sessions when the tests were performed. The average ages were 35 for the men (limits 17 to 66) and 42 for the women (limits 21 to 70).

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† For permission to do this I am indebted to the medica committee of the Middlesex Hospital. To the casualty officer who have helped me to select subjects I am also deeply gratefu

The patients were all presumably "healthy" as regards their respiratory apparatus, but could not be regarded as very "fit" in a general sense for, with the exception of certain of the patients with skin diseases, they would not otherwise have been attending hospital. They can, however, be regarded as a fair sample of the "hospital population," and should serve as a basis for standards for tests which it is proposed to apply to similar patients with disordered respiratory function. There are several fallacies, however, about using patients suffering from "nervous depression," or from abdominal complaints, which will be discussed later.

RESULTS

Expiratory force.—The average for all the men was 88 mm. Hg, with limits of 55 to 120 mm. Hg. For the women these figures were 51 mm. Hg, and limits 20 to 100 mm. Hg. Among the 64 women, however, were 10 who have been labelled "non-coöperators," as they would not really try to carry out the test, and their results were poor. Excluding these, 54 women gave an average of 58 mm. Hg, with limits 30 to 100 mm. Hg. According to the Air Force standards the average for normal persons is about 110 mm. Hg, and under 80 mm. is considered to indicate respiratory inefficiency. Of the present series 11 out of 39 men failed to reach 80 mm. (28 per cent. failures), and only 3 of the women reached 80 mm., representing a failure rate of 94 per cent., excluding the non-coöperators.

Endurance test (40 mm. mercury test).—Among the men there were 3 "non-sustainers"—i.e., subjects who could not keep the Hg at the level of 40 mm. for longer than a few seconds. The remaining 36 men gave an average of 33 seconds (limits 15 to 56 seconds). Among the women the 10 non-coöperators were excluded from this second test, and there were a further 17 non-sustainers. The remaining 37 women gave an average of 24 seconds (limits 15 to 55 seconds).

FIG. 3

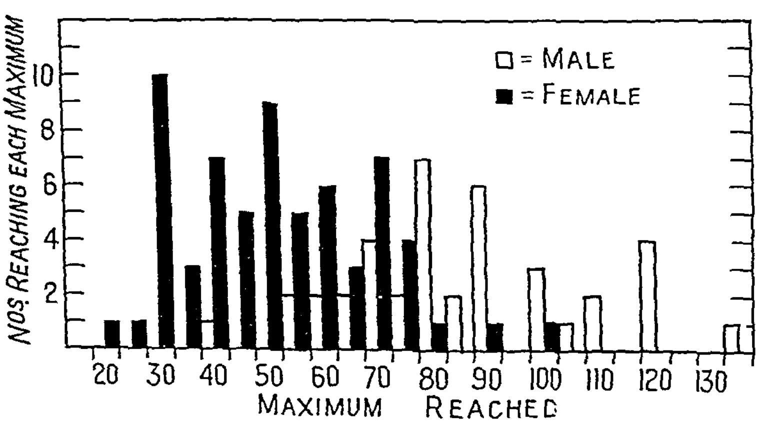

Chart showing the maxima reached in the expiratory force test.

According to the Air Force standards the average time should be between 50 and 60 seconds, and "a time less than 40 seconds is very unsatisfactory." Of the present subjects 25 of the men failed according to these standards (69 per cent.), and only 1 woman passed over 40 seconds. The results of these two tests are represented graphically in Figs. 3 and 4.

FIG. 4

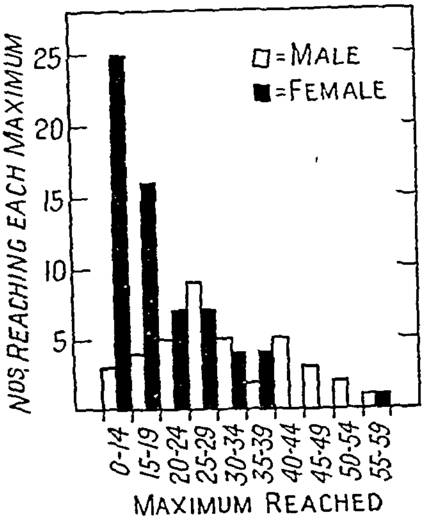

Chart showing the maxima reached in the sustaining 40 mm. Hg test.

In connexion with the endurance test the pulse response is regarded as being of equal if not of greater importance than the actual time achieved. According to the Air Force standards "a large rise in pulse-rate, e.g., from 72 to 132 or 144, is unsatisfactory." We have taken the pulse rate in the second and third period of five seconds from the beginning of the test as a basis for estimating the pulse response of the subject, since in most instances these periods gave the highest pulse readings. Of the 36 men, 7 showed a pulse-rate of 132 or over in one or other or both of these five-second periods. Two of these, however, were nervous subjects with a resting pulse of 144 and 120 respectively. Hence it may be said that only 5 failed (14 per cent.) in this test on the basis of the pulse response. Among the 37 women there were 6 in whom the pulse reached 132 or over in the second or third (or both) five-second periods. One of these had a resting pulse of 108, so that in this group there were likewise five failures.

Reviewing these results as a whole, it is obvious that the number of patients examined is small, but since no selection was made except on the lines laid down, the results do represent roughly the respiratory efficiency of the hospital population *as viewed against the standards of the Air Force.* The psychological factor is an important one in these tests and the urge to succeed was absent in many subjects, noticeably those with various forms of nervous depression. The importance of the abdominal muscles in the tests must also be remembered, and it may be that patients with abdominal pains of whatever origin may not give the response that they might do in perfect health. (In none of the patients tested was any pain present at the time of examination.) The best response (55 seconds) among the women in the endurance tests came from a patient, aged 26 years, who was a singer and a swimmer, while another woman patient of the same age, also a singer, could only manage 17 seconds. Both of these subjects expressed self-satisfaction with their power to control the respiratory apparatus, and their subjective similarity was in striking contrast to the objective differences obtained. A male subject who managed 120 mm. Hg in the expiratory force test could only sustain for nine seconds, and he explained his disability as due to his having been severely gassed in the war. Apart from this single big difference, it may be remarked, that, in general, the results of the two tests ran parallel.

It should also be noted with regard to the poor results obtained in the endurance test that the level of 40 mm. Hg was used throughout, unless the subject had only reached a lower level with the expiratory force test. Obviously with an average for the latter test of 100 mm. Hg in the Air Force standard the level of 40 mm. for the endurance test is a long way below the maximum possible. In a series such as this with averages of 88 mm. (men) and 51·2 mm. (women) the 40 mm. level is approaching much too closely to the maximum. In certain cases it actually represented the maximum effort obtained.

Comparison of the results obtained is therefore not strictly possible, but the Air Force standards are widely used as standards for respiratory efficiency, and it becomes important to discuss their ultimate value for the clinician.

PREVIOUS WORK

The physiological significance of the mercury U-tube tests has been explored by various writers. Flack and Burton [18] conclude as follows:—

> "Both tests may be taken as affording indication of the ventilation capacity of the individual and of his susceptibility, as manifested through the action of the medullary centres, to increase of carbon-dioxide and of diminution of oxygen in the alveolar air."

The pulse-rate during the test is also urged as important. Subsequent workers have dealt with certain other aspects of the question, and their conclusions will be briefly summarised. Hambley and McSwiney [19] used a modification of the endurance test, counting the pulse-rate before and after the mercury had been held at 40 mm. for 20 seconds. They reported differences in the response obtained according to whether the subjects were fatigued or not. Cripps,[20] in a valuable report, gives the results of applying the Air Force efficiency tests to men and women. She took the results obtained from over 1000 candidates for the Air Force, and compared these with results from nearly 500 women (students at Bedford College, students at the South-Western Physical Training College, and a group of civil servants). For the women she reduced the level of mercury for the endurance test to 20 mm. of mercury, so her results are not strictly comparable with those here reported. She found uniformly lesser mean values in women than in men. The Bedford College students gave slightly better results than the other groups, and these were, for the respiratory force, an average of approximately 78 mm. Hg, and for the endurance test (20 mm. Hg) 45 seconds. Warner and Hambley [21] studied the physiological mechanisms in association with the endurance test at 40 mm. Hg. They emphasise the importance of good abdominal tone for success in this test. With Pembrey [22] the same authors investigated various aspects of physical fitness, using the endurance test as one of several tests. They concluded that the mercury manometer test (at 40 mm.) was not a test of physical fitness, and emphasised that the pulse records in association with exercise afforded the best test for general physical efficiency. Schneider,[23] working in connexion with the American Air Force, has discussed Flack's two tests. He thinks the test for expiratory force is unquestionably a measure of the power of the abdominal and other expiratory muscles. The endurance test for his subjects gave an average of 52·2 seconds. He mentions the importance of practice in these tests, and thinks that both tests require too much voluntary attention and hearty coöperation on the part of the patient, both tests being to some extent psychological.

Discussion

In discussing tests for the efficiency of any system of the body it is important to determine at the outset some sort of answer to the question "efficient for what purpose?" Lungs which might be regarded as inefficient for air pilots, flying at high altitudes, may still carry out their functions perfectly for the civilian population, and although inefficient by Air Force standards, a patient's respiratory apparatus may yet be in a healthy enough state to stand operative interference without failure. Flack,[16] in his enthusiasm for the subject of respiratory efficiency, attempted to suggest that the averages obtained from Air Force pilots and cadets could be adopted as standards for the general community. Such generalisation would seem as a result of this small investigation quite unjustified. Cripps [20] is also strongly of this opinion in her report, and indeed she questions whether physiological respiratory tests can be used as guides to the particular conditions they have been held to interpret. It seems justifiable to conclude that even if Flack's tests are applicable as tests for respiratory efficiency, fresh standards for the general population, and especially for the less physically fit members of the population, must be determined before they can be applied to the problems outlined in the introductory section of this paper. The variations were enormous in the present series, the psychological influence was strongly marked in many subjects, and taken alone Flack's tests have really afforded very little help in arriving at some answer to the questions—is this patient's respiratory apparatus functioning properly? And, if not, what is the degree of failure?

Summary

The various tests which have been employed for estimating the efficiency of the respiratory apparatus are described and briefly discussed. The results of a special investigation of the mercury U-tube tests of Flack for a group of hospital patients are given. It is shown that so many factors enter into the results of these tests, psychological as well as the efficiency of other systems and parts of the body such as the abdominal muscles, that taken alone such tests have probably little value for the special purpose of investigating respiratory efficiency before thoracic surgery is carried out. In any case the standards set out by Flack for the Air Force appear to be far too high for the ordinary population attending hospital. Standards for this population are suggested in this paper but are based upon only a very small number of patients. Further work is in progress in connexion with this point and with other tests for respiratory efficiency.

I am indebted to Dr. R. A. Young for much encouragement and to Prof. Samson Wright for his helpful criticisms and permission to work in his department.

(Continued at foot of opposite page)

VITAMIN-A RESERVES OF THE HUMAN LIVER IN HEALTH AND DISEASE

WITH SPECIAL REFERENCE TO THE SCOPE OF VITAMIN A AS AN ANTI-INFECTIVE AGENT

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The experiments described below were carried out with two main objects: (1) to obtain information as to the vitamin-A reserves of inhabitants of this country, similar to that made available in Holland by L. K. Wolff,[1] and (2) to examine how far the observation of low vitamin-A reserves can be correlated with any particular type of pathological picture. Mellanby and Green[2,3] have suggested that vitamin A may be of clinical importance as an anti-infective agent, and on this assumption some correlation between infection and low vitamin-A reserves might be expected.

VITAMIN A IN THE RAT

Although the present work deals with the vitamin-A reserves of human subjects, a brief summary of our knowledge of the action and economy of this vitamin in the rat will indicate the nature of the problems to be attacked.

(1) Except for small amounts distributed fairly evenly throughout the body fat, the main reserve of vitamin A is concentrated in the liver. This reserve behaves as a system quite distinct from the storage fat reserves of the body, and may persist undiminished during extreme emaciation.

(2) The extent of the liver reserve may vary over a range of amazing elasticity. On a diet rich either in vitamin A or carotene (provitamin A) a reserve calculated to be sufficient for a century (33 times the normal life period) may sometimes be collected.

(3) Restriction of the rat to a diet deficient in vitamin A leads eventually to the complete exhaustion of the reserves (provided the preliminary level has not been too high), and the development of a state of avitaminosis in which the keratinisation of epithelial tissues throughout the body is the main pathological feature (see L. J. Harris[4]). In this condition the animal becomes particularly susceptible to infection.

(4) If no treatment is given death may result through emaciation without macroscopic evidence of infection, but more frequently the condition is terminated by gross infection—e.g., of the lungs or renal system. Xerophthalmia, the classical syndrome of vitamin-A deficiency, is frequently, but not invariably, observed.

(5) On the other hand the rat may be cured, with restoration of growth and of every outward sign of well-being, by the timely administration of vitamin A in amounts too small to permit the accumulation of a reserve in the liver.

(6) Although deficiency of vitamin A leads to the increased susceptibility to infections, high reserves do not necessarily ensure protection. Occasional cases of fatal infections may be observed in rats possessing abundant stores of the vitamin.

Thus in the rat vitamin-A reserves varying from nil to very high values may be consistent with apparently normal health. It is therefore only to be expected, as Wilson[5] and Wolff have shown, that the vitamin-A reserves of human subjects should vary over a wide range. At the same time it is questionable whether the human would be able to maintain normal health over prolonged periods when the vitamin-A reserve is seriously depleted. In the first place it must not be forgotten that the experimental rat lives a life of complete ease in a room kept at constant temperature, and is thus protected both from fatigue and from the sudden climate changes, which so often mark the initial point of illness in the human. If the enormous apparent superfluity of vitamin A capable of accumulation in the liver serves any immediate purpose, as opposed to representing provision for the distant future, it is conceivable that a level of "optimal" as opposed to "*minimal*" vitamin action may exist. In this case an increased store of vitamin A might be a deciding factor in assisting the animal to withstand the strains of ordinary life. Secondly, the experimental rat receives a diet which is designed to be adequate in all dietary factors other than vitamin A. In the human, on the contrary, the observation of a low vitamin-A reserve must almost inevitably imply that the dietary was also inadequate, possibly to a more acute degree, in several other factors. Thus vitamin A in many of its common sources has a distribution similar to that of vitamin D, while carotene (provitamin A) and vitamin C are found together in green vegetables. In the human, therefore, a low vitamin-A reserve must often be an indication of general malnutrition. The main interest in the present work indeed might be said to rest in the broad indications of those diseases which seem to be associated with nutritional abnormalities, rather than in the incrimination of vitamin-A deficiency as the specific ætiological factor involved.

Experimental

Weighed specimens of human liver were obtained at autopsies.

These were supplied through the kindness of Prof. J. Shaw Dunn, Royal Infirmary, Glasgow; Dr. W. M. Elliott, Ruchill Fever Hospital, Glasgow; Prof. E. H. Kettle, St. Bartholomew's Hospital, London; Prof. R. Muir, F.R.S., Western Infirmary, Glasgow; Miss Dorothy Russell, London Hospital; Prof. M. J. Stewart, General Infirmary, Leeds; Prof. H. M. Turnbull, London Hospital; and Dr. C. G. L. Wolf, Addenbrooke's Hospital, Cambridge, to whom I am also indebted for the description of the cases. The specimens were preserved in dilute aqueous potash and were posted to Cambridge in small bottles. Preliminary experiments proved that the vitamin-A content was not affected either by reasonable delay between death and autopsy or by prolonged storage in alkali.

In extracting the liver oil a simplified modification of the usual alkali digestion process was employed. The vitamin A was then estimated by the antimony trichloride method, the results being calculated in blue units per gramme of fresh liver according to the scheme previously adopted.[6]

(*Continued from previous page*)

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CLASSIFICATION OF CASES

Classification has been carried out according to disease under two schemes. In the main scheme (Table I., Fig. 1) each case examined (with the exception of a few cases having rare specific diseases, which have been omitted from consideration in the present communication) has been included once only in its most appropriate group as indicated by the primary disease. This disease, of course, may be distinct from the terminal lesion—e.g., cancer cases would be classified as such although the actual cause of death might be pneumonia, peritonitis, or post-operative collapse. The second subsidiary scheme (Table II., Fig. 2) concerns only certain diseases having special interest. Classification in this scheme has been restricted to those cases in which mention of these diseases is made, and where necessary cases have been included more than once under several different diseases. In this scheme a hypothetical cancer case having pneumonia and peritonitis would be classified under both the latter headings.

TABLE I. (SCHEME I.)

Group.	Cases.	Diseases. (Figures in parentheses refer to number of cases.)	Vitamin-A reserve (b.u. per g.).		Sub/super-norm. ratio.
			Av.	Md.	
1	23	*Accidents* (16), poisoning (7)	367	235*	1
2	32	"*Internal Accidents.*"—Aneurysms, embolisms and thrombosis, hæmorrhage, intestinal strangulation, obstruction or fistula, urethral stricture	415	225	0·78
3	50	[illegible] diverticulosis, dilatation	298	207	0·72
4	24	*Organic Heart Diseases.*—Arteriosclerosis, hyperpiesia, mitral stenosis, atheroma, endocarditis (non-infective)	109	38	0·2
5	9	*Heart Infections.*—Infective endocarditis (7), pericarditis (2)	277	212	0·8
6	26	[illegible]	209	145	0·3
7	17	*Organic Kidney Diseases.*—Chronic interstitial nephritis (15), parenchymatous nephritis (1), uræmia (1)	177	85	0·42
8	13	*Urogenital Infections.*—Pyelitis, pyonephrosis, pyelonephritis (8), cystitis (3), abscess of prostate (2)	279	163	0·63
9	23	*Infections of Head and Spine.*—Meningitis, otitis media, cerebral abscess, submaxillary abscess, suppuration in sinuses	278	190	0·77
10	21	*Septicæmia*, pyæmia, septic arthritis, osteomyelitis, &c.	61	65	0
11	19	*Tuberculosis* (all forms), including tuberculous meningitis	231	170	0·73
12	53	*Neoplastic diseases* (all forms).. ..	272	180	0·71
13	7	*Diabetes*..	1160	1300	∞
14	8	*Syphilis* † (all forms)..	507	224	1

Av. = Average. Md. = medial.

* Taken as "normal" reserve.

† Cases of known syphilitic origin. No doubt many other cases of undiagnosed syphilitic history have been classified under other diseases—e.g., aneurysms.

TABLE II. (SCHEME II.)

Cases.	Condition.	Vitamin-A reserve (b.u. per g.).		Sub/super-norm. ratio.
		Average.	Medial.	
8	*Venous thrombosis*	128	63	0·14
27	*Gastric or duodenal ulceration*	244	163	0·42
33	*Peritonitis*	224	163	0·5
11	*Mitral stenosis*, endocarditis or incompetence ..	47	27	0·1
60	*Pneumonia*	182	122	0·33
19	*Bronchitis*, bronchiectasis ..	106	72	0·06
9	*Otitis media*	328	228	0·8
18	*Septicæmia*, pyæmia ..	128	78	0·2

TREATMENT OF RESULTS

In view of the enormous variations between the extreme values in any particular group it is essential that special treatment should be adopted in the examination of results. Although averages for each group have been given it will readily be understood that these values may be most deceptive, since one case giving a very high value could obscure the effect of several subnormal values, in which our main interest lies. (One case giving 2000 b.u. per g. would neutralise the effect of four completely deficient cases.) On the other hand, the *medial* value obtained by arranging the cases in order of ascending vitamin-A reserves and taking the case in the centre of the list (in practice the average of the 3–6 central cases, according to the size of the group) although not unduly influenced by the inclusion of extravagantly high values, will also fail to indicate the presence of interesting low values. It has therefore been necessary to resort to a diagrammatic method in order that the nature of the results may be clearly understood. In Figs. 1 and 2 each case has been represented by a narrow rectangle, the height representing the extent of the vitamin-A reserve per gramme of liver, the width being adjusted in an inverse ratio to the number of cases. The shapes of the diagrams provide a rapid means of comparing the results obtained in different diseases, while the degree of fineness of the indentations affords some indication of the relative reliability of the evidence.

THE "NORMAL" VITAMIN-A RESERVE: "SUB- OR SUPER-NORMALITY RATIO"

Although the range of variation of the vitamin-A reserve even in accident cases makes the conception of a normal value somewhat anomalous, it is necessary that some figure should be chosen provisionally in order to serve as a basis for the discussion of results. In the present work the medial value in the accident group (235 b.u. per g.) has been taken as the most logical choice for the "normal" value.

As a further device to assist in the summarisation of results a comparison has been made of the numbers of cases in each group falling above and below the "normal" value. The quotient of these two numbers gives the "normality ratio" for the group. In the accident group the value is unity. Other groups may show either sub- or super-normality ratio ranging from 0, which implies that all the cases fall below normal, to ∞, which means that all the cases are above normal.

Discussion

In work of the present character, which deals with material outside the scope of scientific control, great caution must be exercised in the interpretation of results. At the same time the aim of the investigator must be to seek out those directions which appear to hold out hopes of future progress.

GENERAL AVERAGE

For all the 325 cases examined an average value of 282 b.u. per g. was given. This may be compared with the value of 251 b.u. per g. given by Wolff as the average for 915 cases.* Unfortunately the magnitude of the error in the antimony trichloride method of assay, applied under slightly varied conditions in unrelated laboratories, makes it

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* All values quoted from Wolff's paper have been increased by 10 per cent. to allow for a recognised difference in technique.

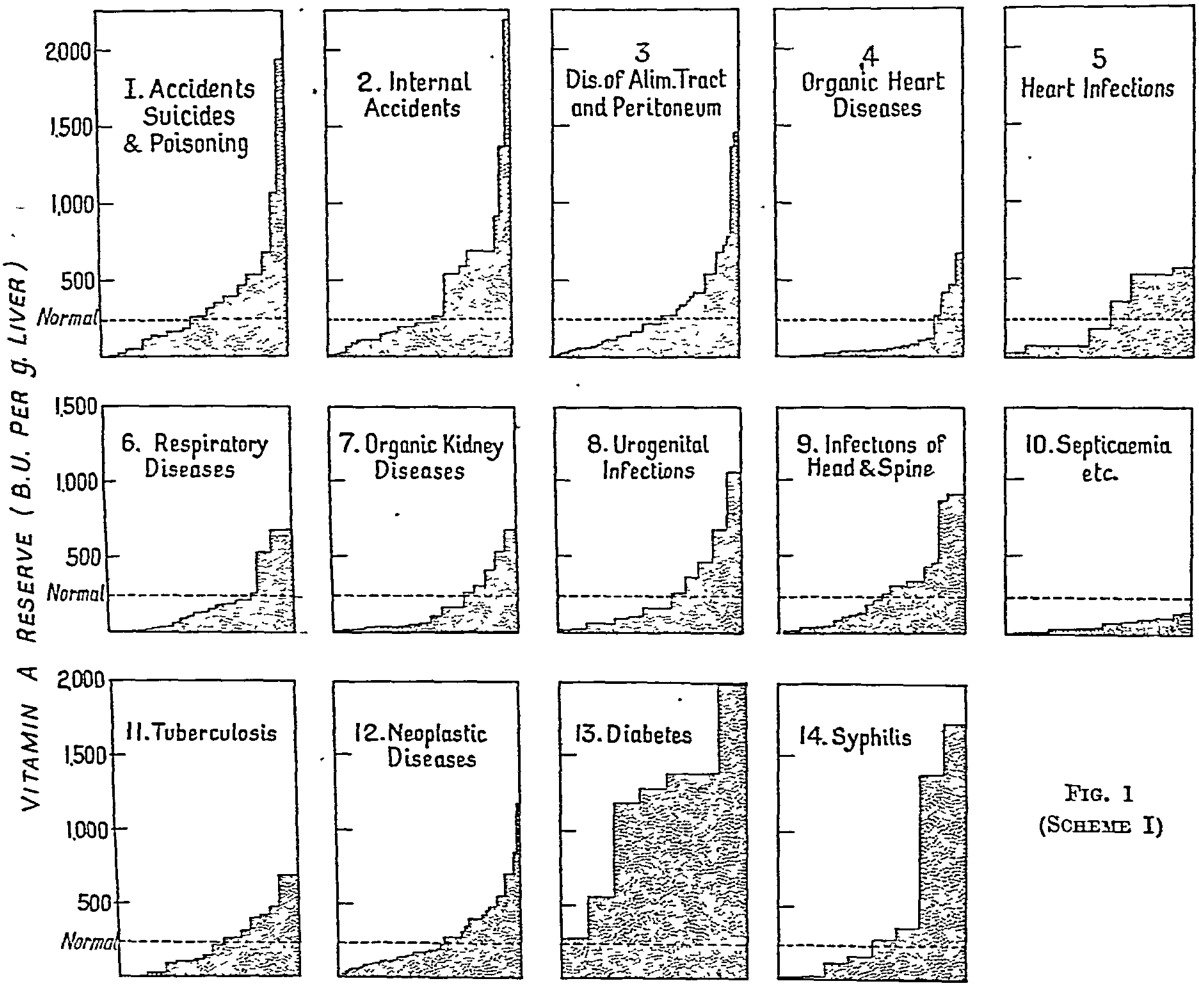

FIG. 1 (SCHEME I)

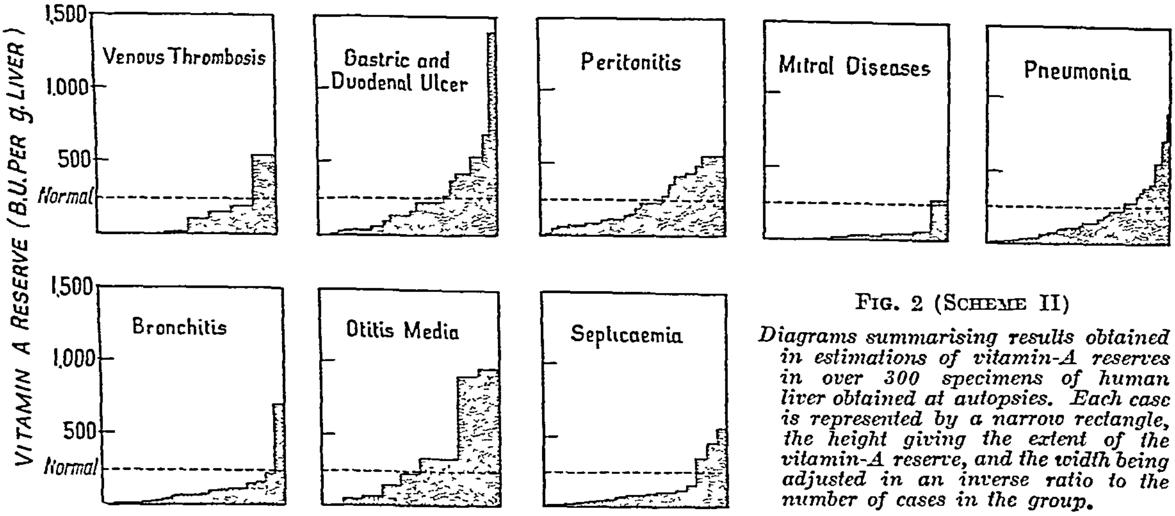

FIG. 2 (SCHEME II)

Diagrams summarising results obtained in estimations of vitamin-A reserves in over 300 specimens of human liver obtained at autopsies. Each case is represented by a narrow rectangle, the height giving the extent of the vitamin-A reserve, and the width being adjusted in an inverse ratio to the number of cases in the group.

impossible to decide whether this small difference is of real significance. Indeed if the two averages represented duplicate determinations on the same material the agreement is quite as close as could be expected. It would appear therefore that the average vitamin-A reserves of the populations of Holland and Great Britain, *at least as far as can be judged from results* relating to restricted localities, are of much the same order.

DISEASES ASSOCIATED WITH NORMAL VITAMIN-A RESERVES

From Table I. it will be seen that groups 2, 3, 5, 9, 11, 12, 14, including "internal accidents," diseases of the alimentary tract and peritoneum, heart infections, infections of the head and spine, tuberculosis, neoplastic diseases, and syphilis, gave normality ratios between 0·7 and 1, while group 8 (urogenital infections) gave a slightly lower ratio, 0·63. It seems improbable that the difference of any of these ratios from unity is of ætiological significance, particularly since Wolff has observed a much smaller gap between the average for 78 accident cases (270 b.u. per g.) and the average for acute and chronic diseases (248 and 227 b.u. per g., respectively). A small difference from the "accident" level might perhaps be anticipated in those diseases involving under-nutrition during prolonged decline.

It must be pointed out, however, that several of the diseases classified in the above groups (urogenital infections, gastric ulceration, otitis media) are often observed in the rat suffering from experimental vitamin-A deficiency. It might be unwise therefore to dismiss the possibility that a nutritional factor may have been involved in a small percentage of cases. Thus although data for nine cases of otitis media gave only slightly subnormal figures, the three lowest cases gave values of 0, 40, and 50 b.u. per g. It must also be remembered that in cases of more or less unknown history deceptively high values may sometimes have resulted through the therapeutic use of substances rich in vitamin A, notably cod-liver oil at a time when the condition of the patient had become too advanced to permit recovery. Wolff has suggested that his high values for tuberculosis may be due to this reason. As far as can be ascertained, however, in most of the cases examined in the present work the patients did not receive cod-liver oil.

SUPER-NORMAL VITAMIN-A RESERVES

The values observed in diabetes are of interest as evidence in support of the rational character of results obtained by the antimony trichloride method. Since green vegetables and carrots feature largely in the special dietaries to which diabetic patients are usually restricted it might be expected that the vitamin-A reserves would prove to be unusually high. In confirmation of Wolff's results this was found to be the case, the average reserve for the seven cases examined (1160 b.u. per g.) being about three times greater than the average given by the accident group.

DISEASES ASSOCIATED WITH SUBNORMAL VITAMIN-A RESERVES

Although group 3 (diseases of the alimentary tract and peritoneum) gave a ratio (0·72) pointing to close similarity with the accident group, somewhat lower ratios have been given by peritonitis (0·5) and by gastric or duodenal ulceration (0·42) when treated separately under Scheme II. Wolff however has reported rather high averages in these conditions, and the low values in this instance may be attributed to the inclusion of those cases in which these lesions are secondary to some other disease. The ratio in group 4 (organic heart disease) (0·2) however is decidedly subnormal, while under Scheme II. the ratio for 11 cases of mitral disease (0·1) is even lower. The *ratio in group 6 (respiratory diseases)* (0·3) is low, while under Scheme II. we find pneumonia (0·33) giving a low, and bronchitis (0·06) a very low ratio. In group 7 (organic kidney diseases) (0·42) the ratio is again low. The lowest ratio of all however is found in group 10 (septicæmia, &c.) (0), in which every case possessed a subnormal vitamin-A reserve. By the inclusion of certain cases from other groups—e.g., heart infections, head and spine infections—*the ratio rose to 0·2 for septicæmia treated under* Scheme II. Finally a low ratio was observed in eight cases of venous thrombosis (0·14). This finding is of interest in view of Green's observation of low vitamin-A reserves in several cases showing this condition, and of the low average (139 b.u. per g.) obtained by Wolff in seven cases of embolism.

In reviewing the results in the above diseases we may consider that the low values observed in respiratory diseases and in the septicæmia group lend *colour to the current view that* hypovitaminosis A may play some part in the ætiology of these conditions. Particular theoretical interest must be attached to the low values in bronchitis. It would appear that the localised proliferation and desquamation of the epithelial lining of the bronchi, which takes place in this condition under the influence of infection, is not to be confused with the widespread keratinisation of epithelial tissues throughout the body which is associated with infection in experimental vitamin-A deficiency. The present results, however, suggest the possibility that in hypovitaminosis A of insufficient severity to produce widespread keratinisation the bronchi may still fail to show normal resistance to bacterial invasion. It is of interest that Wolff has observed subnormal averages both in sepsis and broncho-pneumonia, although in each case the difference from the general average is less marked than that observed in the present work.

On the other hand, the observation of low vitamin-A reserves in organic heart and kidney diseases cannot readily be correlated with our present conceptions of the functions of the vitamin. The importance of the matter certainly demands that a much larger number of cases should be examined before definite conclusions are reached, but it is noteworthy that Wolff has observed averages decidedly below normal both in chronic heart diseases (102 cases, average 179 b.u. per g.) and chronic kidney diseases (54 cases, average 142 b.u. per g.). Since renal and cardiac inefficiency, together with bronchitis, often represent more or less closely related lesions in the same subject, it is of interest that all three diseases should be associated with subnormal vitamin-A reserves. Nevertheless it must remain undecided whether nutritional deficiency represents a genuine factor in the ætiology of these diseases. It is obvious that malnutrition may be of objective or subjective character, according to whether the diet is inadequate, or the powers of assimilation of the subject are at fault, either through failure to eat normal amounts of food or through the defective absorption of food constituents after ingestion. The frequent observation of adequate vitamin-A reserves in wasting diseases—e.g., cancer of the alimentary tract—suggests that failure to eat normal amounts of food, although probably causing a general lowering of values, may not completely account for the preponderance of disproportionately low values observed in heart and kidney diseases. It remains possible, however, that under certain conditions the liver may be unable to absorb or retain the vitamin A available in the food-supply. Wolff has obtained a low average (78) for six cases of cirrhosis of the liver, and suggests that the powers of retention may be impaired in this condition, but the average (784) obtained in the present work for the same number of cases, possibly of a different type of cirrhosis, does not support this view. The experiments of H. N. Green† on the treatment of septic puerperal cases with large doses of vitamin-A concentrate, however, afford definite proof that the absorption of the vitamin, as judged by the amount found in the liver post mortem, may sometimes be extremely inefficient, or even completely negative. The question of the exact significance of the present results must therefore be left open.

VITAMIN A AND INFECTION

From the fact that groups 3, 5, 8, 9, and 11, each of which includes a predominance of cases of infective type, give normality ratios differing only slightly from unity, it must be obvious that adequacy, or even abundance, of the vitamin-A reserve does not itself ensure protection from infection. To illustrate this point further a short representative list of infective cases possessing adequate vitamin-A reserves is given in Table III.

TABLE III

Case.	Sex and age.	Post-mortem report and history.	Vitamin-A reserves per g. liver.
56	F 35	Incomplete abortion and general peritonitis, duration 3 days. (Streptococcal.)	550
80	F 51	Infective endocarditis. 6 wks. history.	600
91	F 9	Organising lobar pneumonia of lt. lower lobe (4 wks. duration). Pneumococcal peritonitis (8 days). Infarct of spleen. Intense toxic visceral changes.	225
94	M 36	Empyema. Focal peritonitis with abscesses.	550
106	F 25	Double hydronephrosis. Cystitis. Pneumonia.	375
114	M 30	Purulent meningitis. Portal and systemic septicæmia. Gangrenous appendicitis.	450
122	M 23	Long-standing (1923) suppuration in lt. frontal and ethmoidal sinuses. Subepicranial suppuration. Subdural abscess (lt.). Leptomeningitis. Multiple abscesses.	475
144	F 3 11/12	Caseous tuberculosis of cervical and mediastinal lymph nodes. Advanced tuberculous broncho-pneumonia rt. lower lobe of lung. Acute miliary tuberculosis.	400
147	F 4/12	Tuberculous meningitis. Generally disseminated tuberculosis.	425

The action of vitamin A cannot therefore be described as anti-infective in an indiscriminate or "positive" sense. Vitamin-A deficiency would seem to be one of many errors which may lead to the same terminal infections. The action of the vitamin can only justly be described as anti-infective in a sense complementary to the fact that deficiency increases the liability to infection.

On the other hand, the very low results obtained in the septicæmia group suggest that hypovitaminosis A, or the low general standard of nutrition which it must imply, may be a factor of clinical importance in the ætiology of certain types of infection. In view of the comparatively small number of cases investigated, it is obvious that further work is necessary both to confirm this conclusion and to define more clearly the points of difference of these infections from others which seem to be associated with normal vitamin-A reserves. Thus it is difficult to understand why more or less normal reserves should have been observed in the case of the few septicæmias examined having foci in the heart or head. For the present however there seems little obvious connexion between the development of septic arthritis and osteomyelitis, the few available cases of which have shown a distinct tendency towards low vitamin-A reserves, and the familiar epithelial changes of experimental vitamin-A deficiency. While it seems quite possible that epithelial lesions may represent only one aspect of the pathology of avitaminosis—or hypovitaminosis A—it must not be forgotten that the low vitamin-A reserves may be a reflection of some more acute deficiency producing lesions of an entirely different character. In view of the site of these diseases, the possibility of hypovitaminosis C must at once come to mind.

THE PREVALENCE OF HYPOVITAMINOSIS A

Adopting the arbitrary value of 55 b.u. per g. as the level under which the vitamin-A reserve should be considered definitely subnormal, Wolff has shown that hypovitaminosis A is prevalent in about 16 per cent. of the total population of Holland, new-born infants being excluded. On the same standard the vitamin-A reserve in 24 per cent. of the cases examined in the present work would be considered inadequate. Table IV. shows the distribution of cases according to the amount of the vitamin-A reserve, expressed as a percentage of the "normal" value.

TABLE IV.—*Prevalence of Hypovitaminosis A*

Vitamin-A reserve. Per cent.	Percentage of total cases.	Vitamin-A reserve. Per cent.	Additive percentage of total cases.
0	3·7		
0–10 normal	9·5	Under 10	13·2
10–25 „	10·5	„ 25	23·7
25–50 „	18·8	„ 50	42·4
50–100 „	20·2	„ normal	62·4
Over normal	37·5		

Although the powers of absorption of the subject must have some effect in determining the extent of the vitamin-A reserve, it is obvious that the wide individual variation must primarily be due to differences in dietary habit. Moreover, when we recall once more that the vitamin-A reserve must usually provide a rough indication of the adequacy of many other food components, it is obvious that the whole nutritional make-up of the individual must be considered a highly variable factor, the effects of which are at present largely undefined. Thus we know that acute deficiency in any particular vitamin will lead to lesions of a more or less well-defined character, but are unable to decide whether partial vitamin shortage can result in reduced resistance to disease without the appearance of characteristic lesions. It is perhaps of interest that although 12 cases possessing no measurable vitamin-A reserve were encountered in the present work, not a single instance of xerophthalmia, the classical syndrome of vitamin-A deficiency, was reported. On the whole the evidence presented above supports the view that malnutrition sufficiently pronounced to produce lowered resistance to disease may frequently exist in the absence of florid signs of acute deficiency.

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† To be published in the next issue of THE LANCET.

Summary

1. Vitamin A has been determined in over 300 specimens of human liver, obtained at autopsies, by means of the antimony trichloride method.

2. The vitamin-A reserve varied over an extremely wide range even among healthy subjects dying from accidental causes. The medial value for a group of accidental cases has been taken as representative of the "normal" vitamin-A reserve.

3. The ranges of vitamin A found in different diseases have been compared by a diagrammatic method, and by taking the ratio of the number of cases falling above and below the normal vitamin-A reserve.

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SIMPLE CYST OF THE LIVER
WITH AN ANALYSIS OF SIXTY-TWO OTHER CASES

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SENIOR HOUSE SURGEON, METROPOLITAN HOSPITAL, LONDO
AND
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IN view of the comparative rarity and uncerta ætiology of simple cysts of the liver, the followi case may be of some interest.

CASE NOTES

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Summary

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It is generally considered that these cases of simple non-parasitic cysts of the liver are ætiologically distinct from multiple cystic disease, in which there is frequently a coexisting cystic condition of kidneys and pancreas. Alexander[23] and Bristowe[24] also drew attention to this frequent association of multiple cystic disease of the liver and kidneys.

Incidence.—The relative incidence of simple cystic disease in other pathological conditions of the liver is small. Ackman and Rhea[25] state that only 11 cases were found among 6141 autopsies at the Montreal General Hospital during the last 24 years. Moreover, in most of these cases the condition had caused no symptoms during the life of the patient.

Table I., an analysis of 62 cases of simple cyst of the liver which came to operation, yields some interesting information. Out of this series the cyst was present in the right lobe of the liver in 20 cases and in the left lobe in 10 cases, whilst in only one case was the quadrate lobe involved. In only three cases was the cyst entirely intrahepatic. In nine of the cases it was not possible to state definitely from which lobe of the liver the cyst had taken origin, and in six other cases the cysts were multiple—occurring in both lobes. The relative frequency in the sexes in this series of cases is 46 females to 13 males, the sex in three cases not being given by the literature. This is approximately the same ratio as in Kusakabe's[10] cases, in which he found 36 females to 12 males. In four cases there was associated cholecystitis with the presence of stones in the gall-bladder or common duct, and in four cases there was cystic disease of the kidneys present also.

The cysts may give rise to symptoms at any time of life apparently, the earliest recorded case being 1½ years old and the oldest 75 years of age. But in the majority of cases the cysts do not give rise to symptoms until after 20 years of age. The age-incidence is shown in Table II., from which it is seen that the greatest incidence takes place between 40 and 60 years of age.

TABLE II

Age in years.	Number of cases.	Percentage.
0–10	3	4·8
10–20	5	8·0
20–30	10	16·1
30–40	6	9·7
40–50	13	21·0
50–60	13	21·0
60–70	5	8·0
70–80	2	3·2

Age was not given by the authors in five cases.

Mode of formation.—Simple liver cysts are usually regarded as due to retention from local obstruction of small intrahepatic bile-ducts. This group of tumours corresponds to (*e*) in Sonntag's[22] classification above. Boyd[26] suggests that they are either due to hyperplasia and secretion occurring in an aberrant extrahepatic duct, or to retention due to congenital obstruction. Waring[27] suggests that many of them are sterile hydatid cysts, and that the remainder are either dilated bile-ducts due to obstruction or to some congenital abnormality, or that they are lymphatic cysts. Bland-Sutton[28] regards them as due to pressure on an intrahepatic bile-duct, and has suggested pressure by the corset as the responsible factor. Costantini and Duboucher[29] regard them as dysembryomata, and suggest a parallel to polycystic disease. Other methods of formation have been put forward, such as rupture of an intrahepatic bile-duct (Doran[30]) and dilatation of the glands of the larger bile-ducts (Moscowitz[31]).

It is not proposed here to go into the methods of formation of the other subdivisions of Sonntag's list, most of which are obvious.

Morbid anatomy.—True simple cysts of the liver are usually single, though in a certain number of cases "daughter-cysts" may be present. They may vary in size between extremes: in Bayer's[32] and Winckler's[33] cases the cysts contained 13½ pints of fluid, and occasionally very small cysts are found post mortem. A typical cyst is usually enclosed in a firm fibrous capsule containing numerous blood-vessels, and may show calcareous degeneration in long-standing cases. It may occasionally be multilocular—Alexander[23] found five and Bevan[34] eight separate cavities. The inner wall is usually smooth, but may show fibrous trabeculæ, and is generally a dull white colour. The contents of these cysts vary considerably. They are usually clear or slightly opalescent, but may be blood-stained or bile-stained; Doran's[30] case contained 2½ pints of bile. The fluid is albuminous, and usually contains cholesterol and epithelial debris, having a specific gravity of 1007-1024 (Ackman and Rhea[25]), and is either neutral or slightly alkaline in reaction.

Microscopic appearance.—The capsule is composed of layers of fibrous tissue containing many blood-vessels and occasionally bile-ducts. The lining epithelium is usually either columnar or cubical, or may even be ciliated columnar occasionally; Zahn[35] has collected 14 such cases. In the latter instance the presence of ciliated epithelium is a strong argument in favour of the developmental origin of the cyst from the biliary ducts, since the primitive foregut (from which the liver "buds" develop) is also lined with this epithelium.

Clinical features.—Simple serous cysts seldom give rise to symptoms until they become sufficiently large to cause pressure on surrounding structures. They occasionally cause pain, probably from tension on the peritoneum. Symptoms may arise from pressure on the following structures:—

(*a*) The alimentary tract—vomiting and obstruction.
(*b*) The biliary system—jaundice.
(*c*) The portal vein and inferior vena cava—ascites and œdema of legs.
(*d*) The transverse colon—alternating diarrhœa and constipation.
(*e*) The ureters.

Occasionally they may suppurate and give rise to peritonitis, or may perforate into the abdominal cavity. Hæmorrhage may occur into a large cyst and prove fatal (Kilvington[36]).

Diagnosis is usually difficult, and very few cysts are diagnosed before operation or post mortem. Pneumo-peritoneum, with subsequent radiographic examination, has been suggested by Hoffmann[37] as a mode of diagnosis, but has not proved very successful. According to Ackman and Rhea,[25] when pain results from peritoneal pull it disappears on lying down, whilst dyspnœa is induced or exaggerated; and they suggest this as a valuable method of diagnosis. The condition may simulate cholecystitis (Ackman and Rhea[25]), ovarian cyst (Stevens[38]), or tuberculous peritonitis (Alexander[23]). The differential diagnosis is from any other cystic condition inside the abdomen, and the following conditions have to be considered: (*a*) cystic tumours of the pancreas; (*b*) cystic tumours of the kidney; (*c*) mesenteric cysts; (*d*) mucocele and pyocele of the gall-bladder; and (*e*) ovarian cyst.

Even if the tumour is successfully diagnosed as a cyst of the liver, the possibility of its being either a hydatid cyst or even an amœbic abscess must not be forgotten. In the former possibility the performance of Casoni's test may help in the diagnosis.

Treatment and prognosis.—The treatment is excision of the cyst—whole if possible—and marsupialisation of the cavity in the liver. When the cyst is entirely intrahepatic the treatment is that of amœbic abscess. Care should be taken when irrigating the fistula which results from marsupialisation of the cavity in the liver, as leakage from the track has occasionally caused peritonitis and death.

The mortality of this condition in the cases appended was 13 out of 62 cases—20·9 per cent. within six months, of which three died from post-operative shock (4·8 per cent.), and four from peritonitis (6·4 per cent.). But if the cases performed early in the last century are excluded (which were simply tapped), the mortality-rate is reduced to 16·1 per cent.—a somewhat higher mortality than that given by Schaak,[2] which was 12 per cent. in his series of cases. In cases which recover from operation a fistula from marsupialisation of the cavity always persists for a greater or less time, and in eight cases out of the 62 recorded here the sinus still persisted when the case was reported.

POINTS OF INTEREST IN THIS CASE

The case described above is a fairly typical one of simple liver cyst. The patient had not noticed any swelling of her abdomen, suggesting that the cyst had been gradually enlarging for some time. The symptoms of which she complained—viz., "pain in the right upper part of her abdomen, getting gradually worse towards the end of the day"—is the usual one which first attracts the attention of the patient.

The differential diagnosis was considered to lie between :—

A. *Cyst of the kidney.*—Against this was the absence of urinary symptoms, and the fact that the swelling could not be replaced properly into the right loin, and that there was no band of resonance separating it from the liver dullness.

B. *Cyst of the pancreas.*—Against this was the relative rarity of cysts of the head of the pancreas, and the fact that there were no signs or symptoms of biliary or pancreatic obstruction present.

C. *Mesenteric cyst.*—This was considered the most likely diagnosis. The cyst appeared to be fairly freely movable, and the absence of symptoms suggested this condition. The X ray appearances also suggested that the cyst was mesenteric in nature, rather than pancreatic.

The actual diagnosis of simple liver cyst was never even suspected, as the swelling appeared to be separate from the liver on palpation. At the operation the cause for this fact was apparent; the liver substance was very thin over the upper border of the cyst, and thus allowed the examining fingers to be dipped between it and the liver. The liver itself was also extremely movable, and had apparently been moving with the cyst on abdominal examination.

The operation and post-operative progress were normal and successful, and the pathological examination of the cyst and its contents revealed the normal state of affairs met with in this condition. The absence of bile from the contents of the cyst is explained by the fact that it usually disappears from cysts of long standing (Rolleston and McNee[39]).

In conclusion we wish to thank Mr. R. A. Ramsay for his permission to publish this case; Dr. H. C. Lucey, for the pathological reports on the cyst; and Dr. G. T. Loughborough, for the X ray examination and report.

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Clinical and Laboratory Notes

TETANUS FOLLOWING IMPACTION OF A FOREIGN BODY IN THE NOSE

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IN April, 1931, a case of tetanus was described by Dr. T. H. G. Shore in your columns[1] with a method of infection so rare that a similar case is worthy of record.

A boy, aged 4, was admitted to the Royal Edinburgh Hospital for Sick Children on May 4th last, with the complaint that he had been unwilling to open his mouth for 12 hours.

History.—Seven days previously, while playing in the street, he had inserted a bead into his left nostril. The family doctor, consulted several hours later, saw the bead lying far back on the floor of the nasal cavity, wedged between the nasal septum and the left inferior concha, but owing to the patient's struggles it was not possible to remove the bead, which slipped from the forceps. Rhinoscopy now failed to reveal the foreign body, but there was a clear airway on the left side, so the doctor concluded that the bead had passed into the nasopharynx and had been swallowed. Next day the boy was perfectly well, and remained so until the morning of the day of admission, when he refused to open his mouth to take his breakfast. Twelve hours later he was admitted to hospital.

On *admission* he resented examination, and answered questions with his jaw clenched. From the parents we learnt that the bead had never been discovered, in spite of careful examination of the stools. *Anterior rhinoscopy* was inconclusive, although there was a small elevation far back on the floor of the nose, which might have been a foreign body. The boy was asked to open his mouth, but refused or was unable to do so. As soon as a spatula was inserted between his teeth he went into a state of generalised tonic spasm, which was typically tetanic. The breathing was stertorous, the face cyanosed, the neck and arms rigid, the hands clenched, and the back arched, and the lower limbs, although hypertonic, did not show such marked rigidity. A minute later the spasm passed off as quickly as it had begun. It was then noticed that he had slight left-sided facial paresis and risus sardonicus. His temperature was 101·8° F., and his pulse-rate 148.

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[1] THE LANCET, 1931, i., 916.

Under local anæsthesia a further examination of the nose was carried out, and the object previously mentioned, which proved to be the bead, was removed. It was an ordinary paste bead with a rough surface, and was carefully preserved for bacteriological investigation.

Treatment, following a recent paper by L. B. Cole,[2] consisted in administering massive doses of tetanus antitoxin. Under general anæsthesia lumbar puncture was carried out, and 25 c.cm. of cerebro-spinal fluid was withdrawn. The fluid was under pressure, and on examination both chemically and microscopically was found to be normal in all respects. It was replaced by 50,000 units of antitetanic serum, and a further 50,000 units was injected intravenously.

On recovering from the anæsthetic the child was in exactly the same state as before. When raised by the occiput his back remained rigid, flexion occurring at the hips. During the night he had two short spasms, each of a few seconds' duration, and characterised by generalised clonic twitching. Next day his condition was unchanged, although his temperature had fallen, and in spite of the administration of large quantities of glucose, there was acetone in both breath and urine. He was given a further 26,000 units of antitetanic serum by the intravenous route. His temperature rose again that night to 102·8° F., and at 8 A.M. next morning he became unconscious. The rigidity was still very marked. He never regained consciousness and died at 10.15 A.M.

A *post-mortem examination* was performed, the positive findings being as follows: (1) The left middle-ear cleft contained mucopus; (2) there was a well-marked purulent exudate, suggestive of leptomeningitis on the lateral aspects of both cerebral hemispheres, especially on the right side, and in the walls of the longitudinal fissure. There was no basal meningitis.

Bacteriologically the meningeal exudate was sterile. Cultures were made from the bead and from the floor of the nose, and from the only other possible source of infection, a small abrasion on the right wrist. The cultures from nose and wrist showed no organisms resembling *Bacillus tetani*, but the culture from the bead showed organisms resembling *B. tetani*, along with other organisms. Subculture was performed on two occasions, and the drumstick bacilli were isolated in almost pure culture.

The points of interest in this case are: (1) The unusual method of introduction of the infection. (2) The rare combination of facial paresis and tetanus (*Kopftetanus*). (3) The failure of even massive doses of antitetanic serum in checking the progress of the disease. (4) It raises the question of the advisability of administering antitetanic serum as a prophylactic in similar cases where the foreign body may have been infected with tetanus spores or bacilli.

We are indebted to Dr. Douglas Guthrie, aural surgeon to the hospital, for allowing us to publish the case.

THE BLUE ("MONGOLIAN") SPOT

AMONG JEWISH GROUPS IN PALESTINE

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THE so-called "Mongolian" spot is a blue, flat spot in the sacral or dorsal region which gradually fades away into the normal colour of the skin; it is congenital and disappears at the end of the first or second year of life without leaving any trace. It was first observed by Erwin Baelz (1885) in new-born Japanese infants, and received its name from him. A few years later it was established that the spot existed among all Mongolian peoples. Among the white races it is seen only in exceptional and isolated cases, but it has long been known to the people in regions inhabited by negroes, and in countries like Peru and the Argentine it is considered a sure sign of negro blood. Its incidence among negroes and the offspring of intermarriage between them and other races conclusively proves that the so-called Mongolian spot cannot be regarded as a Mongolian racial characteristic, and it should therefore be called simply the "congenital blue spot" (macula cœrulea congenita).

B. Adachi[1] showed that the identical corium pigment cells that cause the blue spot were to be found in the corium of the sacral region in 50 per cent. of all new-born infants of the Caucasian race. He was able to prove that the pigment of the epidermis and that of the corium are, embryologically, formed independently of each other. He also pointed out that the presence of pigment in varying degree, at times in the epidermis, at times in the corium, forms an outstanding characteristic of different types of ape. The chimpanzee, for instance, possesses extremely little corium pigment and a large quantity of epidermal pigment, which is responsible for the brown colour. The opposite is the case with the macaque, which possesses very little epiderma pigment and a large quantity of corium pigment and is of a blue colour. In man the epidermal pigmen alone remains, while the corium pigment, mos frequently localised in the sacral region, is preserved in a very rudimentary and transitory form during the last months of intra-uterine life and the first year It may remain in microscopical quantities in the Caucasian race, or in larger quantities causing the blue spot.

The blue spot cannot be regarded as directly proportional to the degree of general pigmentation of race or individual, though there is a close inter relation between its existence and the intensity o the epidermal pigmentation of the body. In Palestine I have found several pronounced blue spots in children with a very fair skin, brown hair, and brown eye (though never in children with fair skin and blue eyes) while not infrequently children with dark skin and dark brown hair and eyes, contrary to all expectations showed no trace of it.

The blue spot can at times furnish a clue t parentage. Thus in the case of a child with very fair skin, chestnut hair, and grey eyes, a large blu spot in the sacral region, and a fair Anglo-Saxon father, we assumed some admixture of exotic blood and subsequent inquiries showed that the mothe was a Syrian. A younger sister, fair and with blu eyes, showed no trace of the blue spot. According to Adachi's conception, the blue spot would still remain a symptom of anthropological importanc which should not be under-estimated.

A SYSTEMATIC STUDY IN PALESTINE

No special investigations with regard to th incidence of the blue spot among the Jews of Europ and America seem to have been made. This fac may imply that the incidence of the blue spot i not much more frequent in Jews than in the people among whom they have long been living, a deduction that seems to be corroborated by our own observation among the Ashkenasic and other Jewish groups. My attention was first drawn to the existence of the blue spot in the infant welfare centre in the Jewish quarter of the old city, the first of its kind in Jerusalem, attended at that time by many Yemenite children from the Shiloah village. The blue spot there was very common, whilst at the Rothschild Hospital, attended mostly by Ashkenasim, only the most diligent search led to its detection.

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[2] Brit. Med. Jour., 1932, i., 743.

[1] Zeit. f. Morph. and Anthrop., 1903, iv., 1.

My investigations were conducted between 1921 and 1924 on 2663 Jewish infants up to 12 months of age who passed through my hands in my capacity of physician-in-charge of the children's section of the Rothschild Hospital and the Hadassah infant welfare work in Jerusalem.

Origin of parents.	Cases examined.	Positive.	Negative.	Per cent.
Ashkenasim—				
Poland, Russia ..	1419	6	1413	
Hungary	106	—	106	
Germany	68	1	67	
Rumania	92	1	91	
	1685	8	1677	0·47
Sephardim	620	15	605	2·41
Georgians	23	5	18	21·7
Bokharians	26	9	17	34·6
Mugrabi (N. Africa)..	52	28	24	53·8
Aleppo	29	19	10	65·5
Persians	116	100	16	86·2
Yemenites	112	101	11	90·1

The Table shows that the origin of the parents or infants plays a very important rôle. Thus the children of the so-called Ashkenasic parents, hailing from Poland, Russia, and Hungary, showed a frequency of 0·47 per cent., whilst those of Yemenite parentage showed a frequency of 90 per cent., an incidence 180 times as great. Offspring of marriage between Ashkenasim and Yemenite Jews show a heavy incidence.

The blue spot is comparatively rare among the Sephardim (Spanish Jews), its incidence being only five times as great as among the Ashkenasim. Most striking, however, is the increased frequency in Jews from Asia and North Africa—i.e., Georgian, Bokharian, Persian, and Yemenite. Without in any way wishing to stress the significance of the blue spot as a racial characteristic, it is certainly striking that the Ashkenasim, followed closely by the Sephardim, show so markedly low an incidence as compared with the Asiatic groups. It would be most interesting if a study could be made in regions inhabited by Sephardim in homogeneous masses where no opportunity offers for intermarriage with Asiatic Jewish groups. A proper understanding of the laws of heredity governing the incidence of the blue spot will only be attained after systematic research extending over decades, including the examination of all new-born infants of the various Jewish groups, and when the descendants of individuals affected with the blue spot in infancy can be definitely traced.

In the course of the *past* 40 years the Jewish race has been widely discussed from every possible aspect and angle, and all kinds of conflicting opinions have been expressed with regard to the existing or entire absence of purity and unity of race of the various groups. It is certainly not my intention to attempt to draw any conclusions concerning the purity of the Jewish race from the frequency or infrequency of the blue spot, but the observation made so far will no doubt be of interest to all those engaged in anthropological studies of the Jewish race and its various groups.

CONCLUSIONS

1. The blue spot has anthropological significance.
2. The incidence of the blue spot among Jews varies according to their origin. It is rarest (0·47 per cent.) in the Ashkenasic Jews hailing from Poland, Russia, and Hungary, and most frequent (90·1 per cent.) in Jews from the Yemen.
3. Among the Spanish Jews in Palestine the incidence of the blue spot is five times as high as among the Ashkenasim, though considerably lower than among the Jews belonging to the Asiatic and North African groups.

PRIMARY THROMBOSIS OF THE AXILLARY VEIN

WITH RECURRENCE

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In November, 1930, a healthy girl of 19 was attending a school of domestic economy and during the course of her work stirred a heavy Christmas pudding mixture. On the following morning the right arm ached, and in two or three hours the arm and forearm became much swollen and of a deep pink colour; three days later there was definite discomfort and fullness of the axilla. She was seen next day by one of us (R. M.), who found general œdema of the hand and arm, and a swelling, the size of an almond, in the axilla.

When seen on Nov. 16th the right arm was swollen, cyanotic, and pitted on pressure. It was warm, and the radial pulse was easily found. The axilla felt full, but no glands were detected, and while movements of the limb caused discomfort there was no pain in the joint. No fever was detected at any time. A general clinical examination revealed no other abnormality, and a radiogram of the shoulder showed bone, joint, and periosteum to be normal.

The swelling subsided very slowly, but had entirely disappeared in five months, by which time the full use of the arm had been restored, although it ached a little after a heavy day. The girl remained very well until June 23rd, 1932, when the *left* arm ached and began to swell. This was more noticeable on the 26th, and in a few hours the condition of the left arm resembled that of the right 19 months previously. It was œdematous from shoulder to fingers, slightly blue, with prominent veins. There was no history of previous trauma or undue exertion. On the 30th the left arm was swollen to the shoulder, pitted on pressure, and a little cyanosed. The axilla was full, but nothing definite was palpable and no tenderness was detected anywhere. As before, the rest of the examination was negative. No septic foci were found, and indeed the girl seemed to be, as she always had been, in excellent health.

A complete blood examination was carried out, and as we have seen no record of such examinations the figures are appended.

Red cells	5,440,000	Polymorphs.	71·0 %
White cells.. ..	7,600	Eosinophils	0·5 %
Hæmoglobin ..	103 %	Lymphocytes	27·0 %
Colour-index ..	*0·95*	*Large hyal. mono.* ..	1·5 %

Platelets: 330,000 per c.mm. (normal 200–500,000). *Coagulation time:* 1 min. 41½ sec. (Dale and Laidlaw's method). *Blood calcium:* 11·2 mg. per 100 c.cm. (normal 9–11 mg. per 100 c.cm.).

The swelling of the arm began to decrease after a fortnight, and the colour is now normal with every prospect of complete restoration of the full use of the limb at no distant date.

Primary thrombosis of the axillary vein, of which the above is a typical instance, is a rare though recognised condition which has attracted more attention on the continent than in this country, where the most recent paper appears to be that of

Pearce Gould and Patey[1] in 1928, who recorded eight cases, and gave a full summary of the literature from which certain definite points emerge.

The condition affects mainly young adults between 20 and 30 years of age; the sex in nearly all cases is male, and the arm affected the right. Usually a history of trauma, in the shape of unusual exertion or use of the arm, can be obtained, and most authorities agree to the view that trauma is a definite factor in the ætiology.

Pearce Gould and Patey, and Lowenstein (whom they quote) conducted experiments to ascertain the structure responsible for the trauma, and while the latter suggested the costocoracoid ligament damaged the axillary vein, the former considered the subclavius muscle is responsible for trauma to the delicate subclavio-axillary valve; in both cases undue "exercise" with the arm abducted and the vein distended by an expiratory effort being necessary factors.

Löhr,[2] who describes six cases, and points out that the condition has nothing to do with ordinary thrombosis of the upper extremities, agrees to the principle if not to the actual cause.

The diagnosis is easy if the condition is kept in mind and the progress good, the only treatment needed being rest and later massage.

The case described presents some added features of interest: the sex is unusual, the involvement of the opposite side after an interval of time has not apparently been recorded before, while the uniformly negative results obtained on clinical and pathological examination strongly support the hypothesis that trauma, and trauma alone, is the primary cause of the condition.

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[1] Gould, E. L. P., Patey, D. H.: Brit. Jour. Surg., 1928, xvi., 298.

[2] Löhr, W.: Deut. Zeit. f. Chir., 1929, ccxiv., 263.

BRITISH MEDICAL ASSOCIATION

CENTENARY MEETING IN LONDON

SECTION OF OTO-LARYNGOLOGY

UNDER the presidency of Sir STCLAIR THOMSON, this section discussed the end-results of the

Tonsil and Adenoid Operation

in childhood and adolescence. The subject was introduced from the statistical standpoint by Dr. J. ALISON GLOVER (London) in a paper by himself and Dr. Joyce Wilson. He explained that by "tonsillectomy" he meant the double operation, and by "end-results" the result seen after convalescence from the operation was complete. In 1923 when a number of warnings on the subject were issued by the chief medical officer of the Board of Education it was found that 47,685 such operations had been carried out in England and Wales, while in 1930 the number had risen to 109,738. The operation was particularly rife in public schools, where the percentage of the boys who had had tonsillectomy done varied from 33 to about 70. And more cases *than ever were now being operated* upon at 6 years of age. In Munich only one-half per cent. of the school-children were tonsillectomised, and in Missouri State only two per cent. Enlarged tonsils and adenoids affected all classes of the community about equally, yet a disproportionately large number of children of the more leisured classes suffered the operation. It was therefore well to pause and reckon up the end-results of this growing practice. There were, he said, three classes of patients to consider: (1) those in whom it was certain that the tonsils were diseased; (2) those in whom there was reasonable doubt as to this; (3) those in whom tonsillectomy was done as a preventive or curative measure. W. M. Ash, in an analysis of 1691 cases, showed that out of 100 cases 20 were operated on for frequent sore-throats and tonsillitis, 12 for frequent colds, 12 for chest conditions, 11 for enlarged turbinates, 11 for earache and obstructive deafness, 4 for tubal catarrh, 6 for otitis media, 6 for enlarged cervical glands, 4 for rheumatic conditions, 9 for systemic and general conditions, 3 for eye conditions, 4 for what were called reflex conditions. An extensive statistical inquiry did not support the contention that tonsillectomy was a safeguard against subsequent illness due to infectious disease. He held no brief for the retention of diseased or really obstructive tonsils or adenoids, nor did he cast doubt on the high value of the operation in cases in which there was sure evidence of toxic or obstructive damage; but a review of the literature suggested that the excellent end-results of tonsillectomy in selected cases had been statistically overweighted by the indifferent end-results in cases in which the operation had been performed as a prophylactic ritual. A large proportion of the tonsillectomies now being done on children were, he thought, unnecessary.

DISCUSSION

Dr. REGINALD MILLER (London) said the cardinal feature of rheumatism in young subjects was twofold: (1) its tendency to recrudesce and relapse; (2) the danger of damage to the heart valves, a condition responsible for so many deaths in young and middle-aged people. In these rheumatic subjects the throat was not grossly obstructed; frequently the tonsil was small, and in a number of the cases it was buried. Some 80 per cent. of rheumatic children had septic tonsils and suffered from sore-throats before actual rheumatic symptoms developed. The rheumatic attack was often ushered in by tonsillitis and the association between rheumatism and tonsillitis was very close. It was difficult to assess the *value of tonsillectomy, as the problem* was so complicated; no statistics could take the place of the impression to be derived from a careful watching of the cases over a considerable period. His practice was to keep these children on definite doses of salicylates. Many of his cases certainly had been spared serious rheumatic trouble by tonsillectomy. His view was that early tonsillectomy lessened the danger of fresh trouble in the heart, and if there should be another rheumatic visitation its intensity was much reduced by the operation. Though the tonsils were the main portal of entry of the causa microbe, they were not the only one; certainly the intestines were another portal, and the environment was important. He contended that there was no reason to be dissatisfied with the results of tonsillectomy when it was performed under proper safeguards.

Mr. J. A. KEEN (Leicester) thought it was fair to draw conclusions from efficiently performed tonsillectomies; a second operation for removal of tonsils ought never to be needed. An imperfectly performed operation was worse than no operation, and the tendency to colds and other troubles was then worse than if nothing had been done. Sometimes the operation was blamed for a result due to nothing but faulty technique. He did not agree that a high-arched palate was a result of neglected adenoids. In assessing end-results, the condition many months after the operation should be considered. He was able to show a distinct increase in all the measurements of children after the operation.

Mr. James Adam (Glasgow) thought that not sufficient attention was directed, generally, to measures to avoid the need for operation. Lymphoid tissue would not be present unless it served a purpose in the body economy. If, as Dr. Miller contended, it was so important to remove the tonsils for rheumatism, why was not the lingual tonsil included? In a series of 100 operated children compared with another of 300 not operated it was found that less infectious disease was caught by the non-operated than by the operated. The ideal age for removal was 6 to 7 years; if it were done at a later age, the adenoid facies resulted.

Mr. A. Lowndes Yates (London) remarked that when small pieces of tonsil were left behind at operation, they did little harm until the fibrous tissue contracted; then in later life there ensued a scarring on fauces and palate. To leave such portions was not as harmless as some thought. An operation for this condition was only half performed if all the conditions present were not dealt with; sepsis might be a constant factor, because of the daily environment of the patient; even septic teeth in the mouth of the mother might be a real danger to her child. In these cases too there was usually some coexisting sinusitis and rhinitis. In some patients the resistance was so low that operation should be postponed until it had been raised. It did not always follow that because tonsils were enlarged they should be removed.

Mr. C. Hamblen Thomas (London) agreed that tonsil and adenoid operations were now definitely on the increase, and in some instances the practice was excessive. In some, the fact of operating was a confession of failure. It could be accepted, in a general way, that the reason a physician sent a child for the operation was that his observation had taught him it was beneficial; certainly parents who brought their children to have the operation done held that view, and they were unprejudiced witnesses. Removal of diseased tonsils and adenoids increased the child's alertness, although no improvement could be expected in the mentality of defectives.

Mr. C. E. Jones-Phillipson (Cape Town) said there would always be many who would continue their practice of removing diseased tonsils and adenoids because they were convinced of the good end-results. These results however were not so good as they might be if sufficient attention was paid to the teeth.

Dr. Dan McKenzie (London) said the fact that a recurrence of lymphoid tissue took place after operation played havoc with the value of the statistics presented in the opening paper. It was important to know whether, in the figures quoted, examination was made for the presence of adenoids of the nasopharynx; without that, the statistics were of little value. What was required was information as to the causal factors in these enlargements.

Dr. J. Kerr Love (Glasgow) protested that tonsil and adenoid removal should not always be linked together, as was the present practice. He pleaded for earlier removal of adenoids, leaving the tonsils until it was seen whether they actually produced harm.

Dr. P. Watson-Williams (Bristol) reminded the meeting that it was at his instigation that the Royal Society of Medicine instituted an inquiry into the frequency of the operation. So long as the tonsils were able to cope with the infection they could be left, but when they became choked by a massive infection, removal of them was justified. Not until it was felt that the patient had a systemic infection should the tonsils be removed.

The President said that the surgeon should be first a physician, searching for all possible sources of trouble before deciding as to operation. It could be said that few had left tonsils which they should have removed, but many removed tonsils which they ought not to have removed.

SECTION OF NEUROLOGY

With Dr. J. S. Collier, a vice-president of the section, in the chair, a discussion on

Disorders of the Sympathetic Nervous System

and their response to medical and surgical treatment was opened by Prof. Edwin Bramwell (Edinburgh). The sympathetic nervous system was, he said, occupying an increasingly prominent position in medicine, and he proceeded briefly to review the progress of neurology since the time of Sir Charles Bell's work in 1811. The attention of clinicians during the first half of the nineteenth century had been mainly directed to the problems of the correlation of symptomatology with morbid anatomy, the differentiation of diseases, and the significance of physical signs. Shortly afterwards further additions to neurological knowledge were made by the histological work of Golgi, Nissl, and others. As the nineteenth century drew to its close, physiological conceptions tended to replace the more strictly anatomical outlook, especially owing to the work of Hughlings Jackson and Sir Charles Sherrington. Finally, an impetus was given to the psychological aspect of nervous disease by the studies of Janet, Dejerine, and Freud. Up to the last few years little attention had been paid by the clinician to the autonomic nervous system. Half a century ago nothing was known concerning the physiological anatomy of the autonomic system or of its purpose as a functioning mechanism. In spite of considerable progress during recent years our pathological and clinical knowledge concerning this system was still in its infancy. It was, he said, the Cambridge physiologists Gaskell, Langley, and Anderson who unravelled the scheme of the efferent autonomic system. Gaskell demonstrated that the viscera received nerve-fibres not only from the thoracic region of the spinal cord but also from the brain stem and sacral regions; he argued that the action of these two sets of fibres was antagonistic, the former probably having a katabolic, the latter an anabolic function. Langley had established the general anatomical plan of the efferent autonomic system as we now knew it; he also demonstrated that adrenaline had a stimulating effect upon the sympathetic system, and in conjunction with Anderson did much to elaborate the details of autonomic innervation. There had been some confusion regarding nomenclature, and a uniform terminology was much to be desired. The nomenclature here employed was that of Langley, who suggested the term "autonomic" to denote the system as a whole, and the terms "sympathetic" and "parasympathetic" for the thoracic and craniosacral subdivisions respectively.

It was not, said Prof. Bramwell, until the publications of Eppinger and Hess in 1909 on vagotonia and sympatheticotonia and of Crile and Cannon in 1915 on the effect of emotion that the interest of clinicians was aroused and directed to autonomic disorders. In 1924 the results of Hunter's suggestive investigations upon the dual innervation of muscle and the question of muscle tone together with Royle's operative experiences attracted the attention of surgeons. We were still, however, without definite knowledge of the morbid anatomy of the autonomic system. The condition known as achalasia gastrica (cardiospasm) was the only disease in which it had been worked out.

Sir **PERCY SARGENT** (London) stated that three main points in the surgery of the autonomic system had to be considered: (1) So far the operations were destructive, and consisted in the cutting off of sympathetic nerve-supply; as yet nothing constructive had been attempted. (2) Actual diseased structures were not dealt with so much as disturbing nervous influence resulting in disease in other parts. (3) The surgery of the autonomic system was still in an experimental stage. He then referred to resections of sympathetic nerve-roots in the treatment of Raynaud's disease and of peri-arterial sympathetic fibres in causalgia and in senile gangrene. The operation in Raynaud's disease and in Hirschsprung's disease now had an established position, and the results appeared extremely promising. Certain types of chronic constipation were amenable to similar treatment.

Mr. R. H. **BOGGON** (London) considered the treatment of chronic constipation by operative measures on the autonomic system. The colon, he said, was a complicated neuromuscular mechanism, not a simple tube. The normal functioning of this mechanism depended upon the governing factors working on a coördinated basis. He described the autonomic nerve-supply to the colon, and emphasised the fact that its normal function depended upon a proper sympathetic and parasympathetic balance. The sympathetic fibres were inhibitory and caused contraction of the sphincter and relaxation of the muscle wall, whereas the parasympathetic impulses were motor in function. Excellent results had been obtained by section of the sympathetic supply to the distal colon in cases of Hirschsprung's disease, a condition which appeared to result from lack of balance between sympathetic and parasympathetic systems. The same procedure could be applied to certain types of chronic constipation. The results were not so dramatic as in the case of megacolon, and the patients required careful after-treatment to re-educate their colons. Mr. Boggon then described the technical details of the operation, giving illustrative examples.

Prof. E. D. **TELFORD** (Manchester) referred to certain vascular disturbances of the extremities and their relation to the sympathetic nervous system. In conjunction with Prof. J. S. B. Stopford he had studied over 100 cases, in 35 of which operations had been done on the sympathetic nervous system. Six of the cases were examples of the vascular complications of cervical rib; the remainder were instances of thrombo-angeitis obliterans and of Raynaud's disease. It was not easy to differentiate between these two latter diseases; it appeared likely that they both had a common origin in some irritative lesion of the sympathetic nervous system. It was not unusual to find in the same patient classical thrombo-angeitis obliterans in the legs and a Raynaud syndrome in the hands. Of these vasospastic diseases the cases with cervical rib gave the clearest picture of vasospasm, since they arose from a chronic, persistent, and low-grade irritation of a bundle of fibres due to friction against the rib. A period of coldness and pallor due to persistent vasoconstriction was followed by the onset of thrombosis which might spread rapidly from the digits to the junction of the brachial and axillary arteries. This thrombosis was the direct result of spasm and was no doubt due to narrowing or obliteration of the vasa vasorum.

Similarly, in the other vasospastic diseases the initial spasm was followed later by thrombosis and the area of spasm was steadily diminished by the spread of a thrombotic area. Hence, if sympathectomy is to be of any use it must be done early, since although it could abolish spasm, it could have no effect on an organised thrombus. Sympathectomy appeared, in the present state of our knowledge, to be the only rational method of treatment. It should take the form of an extensive resection of cord and ganglia. The perivascular operation was anatomically unsound in the limbs, and ramisectomy, whilst ideal, was likely to prove insufficient owing to the very variable anatomy of the sympathetic nervous system. In discussing results, it was often objected that the effects of the operation were temporary. In the speaker's opinion the results were complete and permanent provided a sufficiently wide operation *had been planned on true anatomical lines. Restoration* of function depended mainly upon early operation. The later cases with severe claudication or gangrene did not do well. Every case should be tested before operation either by the induction of fever or preferably by nerve block.

Mr. **GEOFFREY JEFFERSON** (Manchester) discussed the central cell stations in the hypothalamus. He described the anatomy of and the recent work on this region of the brain in the attempted localisation of the function of the different nuclei. One of the most striking translations that neurology had witnessed was the slow stripping of one vital function after another from the pituitary body and their re-establishment in neighbouring neural structures. The metabolism of water and of carbohydrates, the regulation of blood pressure, of cardiac rhythm as well as of gastro-intestinal secretion were known to be influenced, i not directly controlled, by centres in the hypothalamus. Mr. Jefferson then described cases o cerebral tumour involving the hypothalamus, the pituitary body, and the third ventricle. Such lesions might be associated with glycosuria, disturbance of temperature, polyuria, polydipsia, &c.—and h illustrated his descriptions with lantern slides. Fo too long, he concluded, we had regarded man as a spinal and medullary animal when we had attempted to explain sudden and unexpected fatalities. I this view were true it should be almost impossible to die from a hemispherical lesion; but actual experience completely refuted such a belief. In th explanation of fatalities from hemispherical lesions a supratentorial cause must be looked for as we as a possible medullary involvement. It was i the head ganglion of the sympathetic in the midbrai that we should seek for the explanation of thes occurrences.

Prof. J. **BEATTIE** (Montreal) described the anatomy and physiology of the hypothalamic region. Ther were three main groups of nerve-cells: (1) the supra-optic; (2) the posterior hypothalamic; and (3) th posterior pituitary. The posterior hypothalami group controlled mainly the autonomic system an when this group was destroyed in animals the invariably died from general peritonitis followin perforation of acute gastric or duodenal ulcers The hypothalamic group of cells, he considered maintained the balance between the sympathetic an the parasympathetic systems. The supra-optic nucl inhibited and possibly controlled to some exten the hypothalamic group. The connexions and physiological mechanisms of the different hypothalamic nuclei were then described and illustrated with diagrams.

Dr. W. Russell Brain (London) described the anatomical arrangements, both central and peripheral, of the ocular sympathetic system and detailed the clinical phenomena resulting from its disturbance. Exophthalmus might occur as the result of organic lesions of the central nervous system, such as encephalitis lethargica, cerebral vascular lesions (especially when situated in the choroido-occipital region), tabes dorsalis, and rarely in disseminated sclerosis and in hereditary ataxia. Penfield had described it as part of the attack in what he had termed "diencephalic autonomic epilepsy"—a widespread excitation of autonomic function which occurred paroxysmally in a case of tumour of the third ventricle. Exophthalmus, especially retraction of the upper lid, resulted from over-action of the ocular sympathetic system. Thus, there were at least two factors responsible for the production of exophthalmus: (1) over-activity of the ocular sympathetic system, and (2) œdema of the orbital contents. Vasodilatation of central origin might also play some part in its production and this aspect might well repay further investigation.

Mr. A. S. Blundell Bankart (London) commented upon the fact that little had been said about sympathectomy for spastic paralysis. The reason of course was that this method of treatment, based he believed on an unsound physiological research, had proved a failure in practice and was now discarded. It should not be forgotten, however, that all recent work on the surgery of the sympathetic nervous system was the outcome of earlier attempts to influence the tone or spasticity of skeletal muscles by removing their supposed sympathetic nerve-supply. Although these earlier operations failed to accomplish their purpose they might have some value. Mr. Bankart had a special interest in the subject as he believed he was the first surgeon to perform sympathectomy for spastic paralysis in the human subject, and incidentally the first to employ the posterior approach to the sympathetic ganglia and cord. Removal of the stellate ganglion for infantile hemiplegia did not have any effect upon the tone or spasticity of the muscles, nor so far as could be seen upon the circulation of the limb. Although there was some transient vasodilatation, there was no obvious lasting change and no disturbance of the sympathetic nervous system was found even when a patient was seen years afterwards, beyond a slight degree of enophthalmus. The operation of ramisectomy as devised and employed for the express purpose of alleviating spastic paralysis had proved a complete failure. Incidentally, however, it gave us a technique which opened up possibilities of treating other conditions which might be benefited by a more or less permanent sympathetic paralysis.

Mr. J. Bagot Oldham (Liverpool) described the use of spinal anæsthesia as a test of the results that might be expected by sympathectomy, especially in cases of intestinal stasis and in Hirschsprung's disease. In the latter, the colon on X ray examination was found to be relatively contracted during spinal anæsthesia; the same result could be expected from sympathectomy. He mentioned that after four years two cases of Hirschsprung's disease remained perfect clinical examples. Renal sympathectomy had been found to abolish renal pain and he mentioned four cases which had been relieved by such an operation.

Dr. S. Levy Simpson (London) said that some 70 years ago Raynaud described his disease and put forward his theory of a vasomotor neurosis. In 1929 Sir Thomas Lewis carried out an interesting series of experiments and concluded that we must discard Raynaud's theory and substitute for it the hypothesis of a local fault of the digital vessels. Working with Brown and Adson at the Mayo Clinic over a long period, Dr. Simpson had found that Lewis's views were applicable only to late complicated cases of the disease in which secondary changes had taken place in the terminal digital vessels. In early cases, anæsthetisation or complete interruption of the sympathetic nerve-fibres by operation prevented any manifestations of Raynaud's disease. He would also emphasise the attacks produced by psychic stimuli. These attacks were often associated with sweating of the hands, and if one did not admit a hypersensitivity of the sympathetic nervous system it would be necessary to postulate an abnormality of the sweat glands for which there was no evidence. White of Boston had since carried out similar observations and had confirmed the work at the Mayo Clinic. It was therefore a matter of regret that Sir Thomas Lewis had not referred to this aspect of the problem in his recent lecture. Dr. Simpson did not agree with Prof. Telford's attempt to identify Raynaud's disease with thrombo-angeitis obliterans. The invariable symmetry, the patency of the vessels at the wrist or ankle, the age, and sex, were some of the features that distinguished Raynaud's disease.

SECTION OF RADIOLOGY

At the first meeting of this section the chair was taken by the President, Dr. Stanley Melville, and Dr. J. F. Brailsford (Birmingham) opened a discussion on the radiographic investigation of

Lumbar and Sciatic Pain

He said that no group of symptoms might be due to such a diversity of causes as those known as "lumbago" or "sciatica." It was possible to determine the cause of the symptoms by radiography in a large number of cases, and no wise clinician would neglect this aid. The lesions causing the symptoms might be due to (*a*) congenital or developmental abnormalities; (*b*) trauma; (*c*) toxæmia; (*d*) acute or inflammatory conditions; and (*e*) tumours.

Congenital or developmental abnormalities occurred in a comparatively large percentage of apparently normal people. They should not be taken as the cause of the symptoms without good reason, but operation to cure them often relieved the pain. "Gynæcological" backache could often be elucidated by radiography. Injuries to the back seemed to be far more important in middle life than in youth; many attacks of so-called lumbago seemed to originate in sudden involuntary movements of the spine. It was difficult to assess the importance of trauma and pain, but where a claim to compensation might arise it was essential to take a radiogram as soon as possible and to examine it very carefully for bone injury. Immediately after injury to a vertebral body there might be very little evidence of deformity, but a week or so later signs of crushing might be visible.

In particular patients relief might be obtained by the discovery and eradication of any one or several of the various septic foci, but no such success should be allowed to become an obsession and a thorough investigation should be made before conclusions were drawn. No more characteristic lesion was detected by radiography than dental sepsis; and no more clearly related examples of cause and effect could be found. Unfortunately, the patient was often unaware of his dental trouble and often his dentist was not consulted when the symptoms arose. If the teeth gave the patient no discomfort and showed no clinical or radiographic signs of sepsis, they were not the cause of symptoms. In Dr. Brailsford's view the dental radiograph should be taken and interpreted by a radiologist; it was important to radiograph the site of pain as well as the possible source of toxin. Only harm could be caused by the removal of normal structures. In lumbar and sciatic pain, antero-posterior and lateral radiograms of the lumbar and sacral spine, pelvis, and hip-joints should always be made. Paget's disease and secondary malignant deposits might be discovered radiographically before there was any clinical evidence of their existence.

Dr. R. M. **Beath** (Belfast) said that the pain of urinary disorder varied from frequent attacks of acute renal colic to a dull, continual backache, and its intensity did not necessarily correspond with the severity of the lesion. It might follow the typical renal colic distribution; it might be unilateral or bilateral; it might radiate down the legs to the toes, suggesting sciatica, or it might be referred to the other side. Fullerton held that the distension of a renal pelvis set up impulses which might be referred to any part of the area supplied by the nerves arising from the sixth dorsal to the third lumbar. The value of radiological findings had been much increased by retrograde pyelography. With Prof. A. Fullerton he had found that intravenous pyelography was especially valuable where the passage of a cystoscope was difficult or impossible; it enabled pyelograms of both kidneys to be obtained in one examination, provided a functional test of the relative excretive activity of the two kidneys, and might give a complete diagnosis in the preliminary examination. When this method was used the patient was saved from the discomfort of the cystoscope. On the other hand, the shadows of the dye were ch less dense and well-defined than with the ograde method, and small deformities of outline ht be overlooked; moreover, since the secretion of the diseased kidney was diminished or absent, the pelvis was less well-defined. Uroselectan B was the best contrast solution for intravenous and abrodil for retrograde work.

Calculus caused pain in every variety of site and intensity without reference to its position. The pain of tuberculous kidney occurred in only about 50 per cent. of cases; it was not very severe, but took the form of a constant ache or soreness. Patients with advanced cases might have no pain, as the disease might extend gradually. The pain of renal tumour was often a dull backache. It might also be associated with cystic kidney, congenital abnormalities, and new growths of the bladder.

Dr. H. K. **Graham Hodgson** (London) dealt with the examination of the accessory nasal sinuses. He maintained that it was necessary to take radiograms from standard angles for every patient, to take several views from different angles, and to centre and angulate the tube exactly. The three positions mentioned in text-books did not permit of accurate visualisation; the erect posture was necessary. He showed a photograph of an apparatus, in which the tube could be worked at any angle or level; the head clamp could be rotated to any angle and was read off on a gauge. A common source of error was in the comparison of an opaque sinus with its fellow. The radiologist could only obtain knowledge of the normal appearance of a sinus by studying radiograms taken in standard positions. Dr. Graham Hodgson described in detail the standard views he was accustomed to use and some of the appearances of infected sinuses.

Dr. R. S. **Paterson** (Manchester) enumerated the following posible causes arising from the alimentary tract of lumbar and sacral pain: gastric ulcer of the posterior wall, especially when adherent to the pancreas; gastric carcinoma, with or without pancreatic adhesions; gall-bladder disease, especially with obstruction of the cystic duct; visceroptosis, appendicitis, and diseases of the large bowel. The clinician should localise the lesion before referring the case to the radiologist, but the latter should not neglect an enema examination even if he found an adherent ulcer on the posterior wall of the stomach.

Dr. R. E. **Roberts** (Liverpool) described the radiological appearances in Paget's disease and malignant bone conditions. In the former syndrome the bone appeared blurred and softened and its gross lamellation was altered. When the skull showed a homogeneous alteration it might be necessary to examine the rest of the skeleton, but the diagnosis was usually clear. In the sclerotic type of the disease the appearances might be like those of the sclerosing type of metastases. He described various forms of bony metastases and other new growths.

Dr. **Gilbert Scott** (London) described spondylitis in young persons. The condition was, he said, due to an early infection of the sacro-iliac joint, probably by tuberculosis. The early stages were hardly ever seen, but he had found them in a number of young patients complaining of "wandering" pains. He thought that the infection spread along the spine.

Dr. L. A. **Rowden** (Leeds) ascribed the contralateral pain in some cases of renal calculus to a translucent stone in the kidney on the painful side. He suggested that the opacity of a sinus with a hypertrophic mucous membrane was chiefly caused by the exclusion of air. Carcinoma of the thyroid was, he said, a possible unsuspected cause of bony metastases.

Dr. A. E. **Barclay** (Cambridge) calculated that the cost of all the examinations recommended by the speakers would amount in London to about £65. He suggested that it was the clinician's business to tell the radiologist where to look.

Dr. J. L. **Delicati** (Bristol) mentioned that good results had been obtained at Bath in juvenile spondylitis by keeping patients on their backs until the infective process had died down. The thoracic muscles were exercised regularly and the hips were moved once a day to prevent adhesions.

Dr. J. B. **Burt** (Buxton) said that sciatica was hardly ever found in cases of extensive inflammation of the intervertebral joints, but that it was very common in osteo-arthritic spondylitis.

Dr. **Brailsford** replied that in cases of marked change with ossification of the intervertebral joints the condition was one of ankylosis and therefore not painful. In osteo-arthritis the joints were eroded and their sharp edges cut into the villi which formed round them, causing great pain. He had not intended to suggest that the radiologist should carry out all the expensive examination implied by Dr. Barclay.

REVIEWS AND NOTICES OF BOOKS

Electro-Surgery

By Howard A. Kelly, M.D., LL.D., F.A.C.S., and Grant E. Ward, M.D., F.A.C.S. London: W. B. Saunders Co., Ltd. 1932. Pp. 305. 35s.

The field of usefulness of high-frequency currents has been greatly enlarged in recent years by advances in design of apparatus and research on the factors influencing current effects. In this book information has been collected relating to the whole field of surgery where high-frequency currents may play a part. So much advance has been due to the work of American investigators that it is fitting that this task should have been performed by two well-known transatlantic surgeons. The book supplies for the English-speaking world a text-book corresponding to the admirable German volume by Franz Keysser which appeared last year. It is built up on very similar lines, beginning with the history of the subject and proceeding to a useful account of the physics of high-frequency currents and their method of production. Though the authors appear to use a spark gap apparatus at least for electro-coagulation, yet they have a high opinion of vacuum-tube machines and predict the use of these exclusively in the future.

The next sections of the book describe the physiological effects of currents and laboratory results. Chapters follow on general principles and detailed technique, whilst the remainder of the book gives accounts of regional methods and the results in typical patients. In the urological section perurethral application of radium to bladder tumours finds a place, because Hugh Young, who writes on this subject, makes it a practice of using electro-coagulation and radium in combination both for benign and malignant tumours. The removal of prostatic obstruction by electro-surgery is well described, and also the management of brain tumours. The work meets a need in surgical literature.

The Discharging Ear

By Arthur G. Wells, B.S., M.B., D.P.H., Aurist to the Downs Hospital for Children; Principal Assistant Medical Officer to the London County Council. Pocket Monographs Series. London: John Bale, Sons and Danielsson, Ltd. 1932. Pp. 92. 3s. 6d.

This little book partly overlaps the field covered by Mr. Mollison's on acute otitis media in the same series; but Dr. Wells includes also diseases of the external auditory meatus, and the important subject of chronic suppurative otitis media, or chronic otorrhœa. For the treatment of the latter, Dr. Wells is an enthusiastic advocate of zinc ionisation, which has been widely adopted in the treatment of large numbers of school-children by county councils and similar bodies, for it acts quickly in those cases in which it is effective, and thus lowers the number of attendances. But to be successful the technique must be carefully observed, especially the thorough cleaning of the ear beforehand, and the filling of the whole of the tympanum and meatus with the ionising fluid. Dr. Wells divides chronic otorrhœa into three groups: (1) cases suitable for ionisation when first seen, in which the trouble is confined to the tympanum—these form about one-half of the total cases of chronic otorrhœa; (2) cases unsuitable when first seen, which may be made suitable by treatment of granulations, or of tonsils and adenoids or septic nasal conditions; and (3) cases which cannot be made suitable because of caries, or of disease in the attic or mastoid. A careful and thorough description of the technique of ionisation is the most valuable part of a useful little book.

A Text-book of Biochemistry

Third edition. By A. T. Cameron, M.A., D.Sc.Edin., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba; Biochemist, Winnipeg General Hospital. London: J. and A. Churchill. Pp. 548. 15s.

This book, which is based on a series of lectures given to students, has reached its third edition in three years. It is intended primarily for medical students who already possess a sound knowledge of organic chemistry, but it will also be found useful by students of science, since the author has included in smaller print some sections not essential for students of medicine but of value to the student of science who needs an introduction to biochemistry. The third edition is somewhat larger than the previous ones, and a new chapter has been added on tissue respiration and muscular activity. Endocrine secretions have now been considered worthy of a chapter to themselves, and those dealing with catalysis, enzymic synthesis, and the vitamins have been extended. The book is now thoroughly up to date, and should prove as successful as its predecessors. The author has had much experience in teaching, and knows well the requirements of the medical student. His subject matter is presented clearly, and in the order in which the student can most easily obtain a good knowledge of the groundwork of biochemistry.

Mammal-like Reptiles of South Africa

And the Origin of Mammals. By Robert Broom, D.Sc., F.R.S. London: H. F. and G. Witherby. 1932. Pp. 376. 25s.

This work, issued under the auspices of the Carnegie Corporation and the Research Board of the Union of South Africa, has long been overdue. The investigation of the fossiliferous beds of the Karroo System began in 1838, and the results have been published at different times, in many scattered papers—more than 100 of them from the pen of Dr. Robert Broom. Now, for the first time, the subject has been dealt with in a form worthy of its importance. The shales and mud-stones known as the Karroo System spread over a large part of South Africa, and appear to have been brought from the North by a huge river, comparable in size to the Nile or the Mississippi. Covering an area of some 200,000 square miles, and of an average thickness of perhaps 2000 feet, they contain, Dr. Broom estimates, the fossil remains of at least 800,000,000,000 animals. Of these, 1200 skulls, belonging to some 350 species of Permian and Triassic reptiles have been collected, and it seems probable that there remain countless species yet to be described. The greater part of the work is taken up with descriptions of these 350 species: dinocephalians, therocephalians, gorgonopsidians, anomodonts, and cynodonts. The development of the mammal-like characteristics can be traced in an ascending scale from Permian to Triassic—the single temporal arch formed by the squamosal and jugal, the teeth differentiated into incisors, canines, premolars, and molars; and the monotreme-like structure of the shoulder-girdle—at least the main line of evolution is indicated. At this descriptive work Dr. Broom is at his best, and comparative anatomists owe him a debt of gratitude for his concise statement of fact, and clear, if not beautiful, illustrations. In his interpretations and inferences however he is at variance with much of current thought, and those "pundits of London" who refused to publish his work in 1896 will raise their eyebrows at his conclusions on evolution. Mutations, Lamarckism, Darwinism are unsatisfactory, "We are almost driven to assume that there is some controlling power which modifies the animal according to its needs and that the changes are inherited . . . Apart from minor modifications evolution is finished. From which we may perhaps conclude that man is the final product; and that amid all the thousands of apparently useless types of animals that have been formed some controlling power has specially guided one line to result in man." This will appear to many biologists a startling doctrine.

Technique chirurgicale

Estomac et duodenum. By PIERRE RHÉAUME, Professeur à l'Université de Montréal. Paris: Masson et Cie. 1932. Pp. 260. Fr.50.

Prof. Rhéaume's object is to make known to the French surgical world the manner in which operations on the stomach and duodenum are performed in Canada. This he achieves by clear descriptions and numerous illustrations in line and in tone. The general methods used resemble those familiar in this country. The first chapter, on the evolution of surgical technique, is interesting. In it we read that Travers of London in 1812 made the fundamental observation that union of hollow viscus to hollow viscus takes place only where at least one applied surface is covered with peritoneum. The advantages of nitrous oxide and oxygen are well emphasised in a chapter devoted to anæsthesia, whilst the preparation and after treatment of patients receive full discussion. Of special interest is the author's advocacy of the use of Murphy's button and of the Depage-Janeway method of gastrostomy. Several methods of gastropexy are described, but the question whether they should ever be employed does not receive consideration. For the sake of completeness the author seems to have described a number of operations that he does not himself practise. This is a useful and interesting book.

Pyorrhœa Alveolaris

The Cartwright Prize Essay of the Royal College of Surgeons of England. By F. W. BRODERICK, M.R.C.S., L.D.S. London: John Bale, Sons and Danielsson, Ltd. Pp. 88. 7*s.* 6*d.*

THE views put forward by Dr. F. W. Broderick on the ætiology of dental caries and pyorrhœa have attracted considerable attention during the last few years. The difficulty of explaining the origin of these diseases on the basis of a purely local causation is so great that there is a general willingness to believe that they depend primarily on some metabolic condition, and the theory that pyorrhœa results from a condition of alkalosis seems, on the face of it, one which should receive serious attention. According to Broderick's thesis, any condition which leads to an anoxæmia brings about a diminution of the CO_2 content of the blood; the serum calcium then becomes in excess of that which the blood can hold, and some of it must be deposited. This leads to the formation of subgingival tartar round the teeth, and this in turn causes a marginal gingivitis which is the forerunner of true pyorrhœa. The infective factor is secondary and represents merely the settlement of bacteria in the damaged tissues. A further factor on which Broderick lays great stress is the stability of the autonomic endocrine system on which depends metabolic balance. The chain of argument with which this thesis is buttressed is somewhat intricate. Dr. Broderick quotes a number of authorities, and shows much ingenuity in assembling a formidable array in support of his views. But he does not show much discrimination, and the experiments, hypotheses, and speculations quoted vary greatly in significance. He has stated his theory in a way which makes it comparatively easy to follow, however, and even if it is not generally accepted he will have performed a useful service in suggesting that dental disease is not a purely local condition.

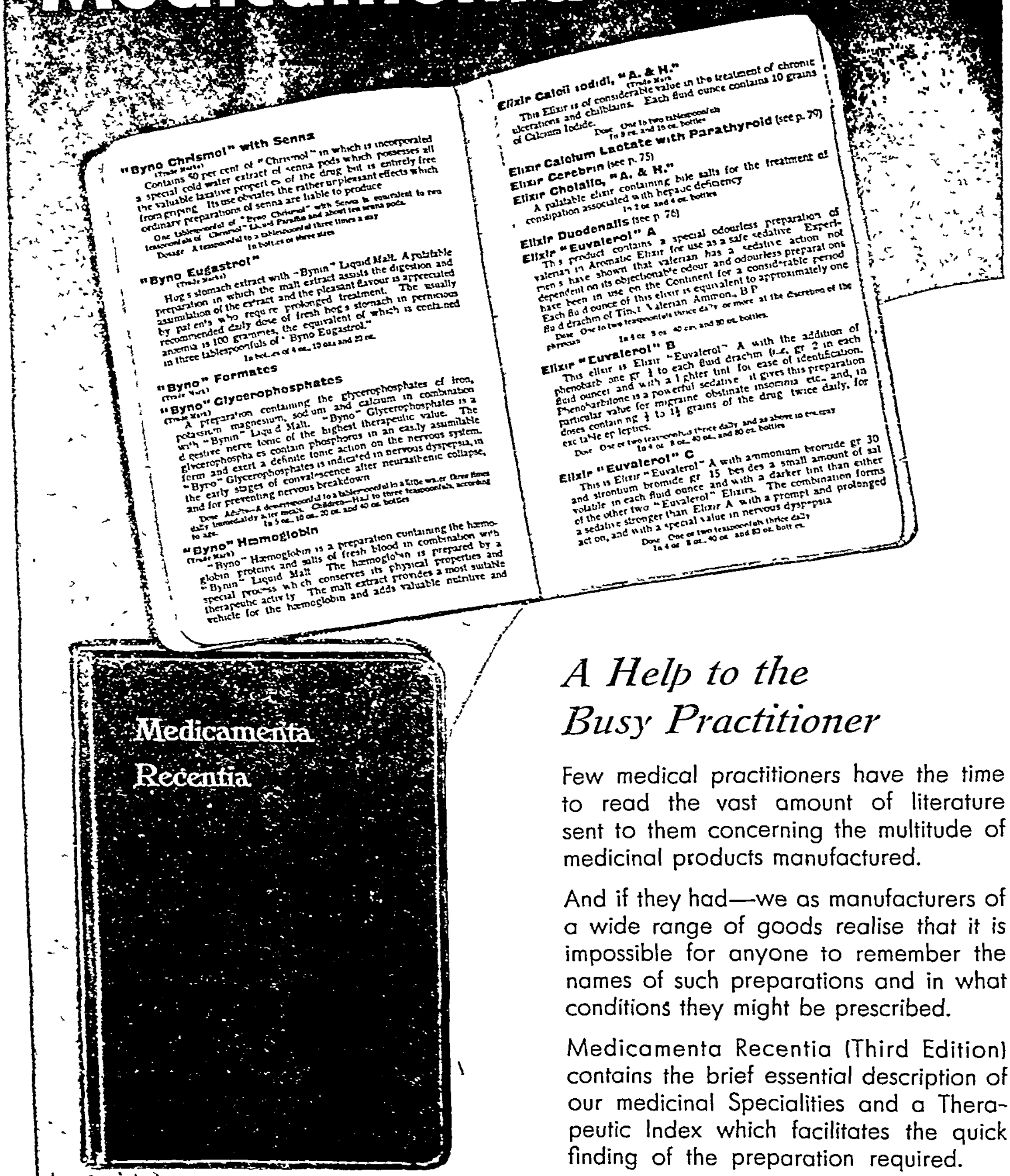
Clinical Endocrinology of the Female

By CHARLES MAZER, M.D., F.A.C.S., Assistant Professor of Gynecology and Obstetrics, University of Pennsylvania; and LEOPOLD GOLDSTEIN, M.D., Demonstrator of Obstetrics, Jefferson Medical College, Assistant Gynecologist to Mount Sinai Hospital. London: W. B. Saunders Co., Ltd. 1932. Pp. 519. 30*s.*

THE advance which has been made in the physiology of reproduction since the work of Allen and Doisy is remarkable. The amount of work done on the ovarian and pituitary hormones in recent years is indicated by the fact that this monograph contains 649 references, most of them to papers published in the last ten years. Unfortunately many of the results obtained seem contradictory; often they have been wrongly interpreted. The time was therefore ripe for the competent review which has here been supplied. The individual hormones are first described under the headings: methods of extraction, physiological effects, and therapeutic action. Œstrin and progestin are fully discussed, and then follows a summary of the work on the anterior pituitary hormones. The authors take the view that the evidence for the existence of two principles (prolan A and B of Zondek, rho I and rho II of Wiesner) is inconclusive. A section on the growth hormone completes a masterly summary of modern work which should be brought to the notice of all who are interested in this branch of endocrinology. This high standard is not, unfortunately, maintained throughout the book; on the clinical side the authors show a tendency to be too optimistic on what appears to be insufficient evidence. It must always be remembered that in the type of case amenable to hormone therapy improvement often follows irrespective of treatment. The authors obtained no results from the administration of anterior pituitary hormones to cases of repeated abortion; indeed, in their experience, therapy along these lines does more harm than good. The records of the method of demonstrating œstrin and other hormones in the blood are interesting; the technique deserves more attention than has generally been paid to it in this country.

The book deserves wide publicity.

Medicamenta Recentia



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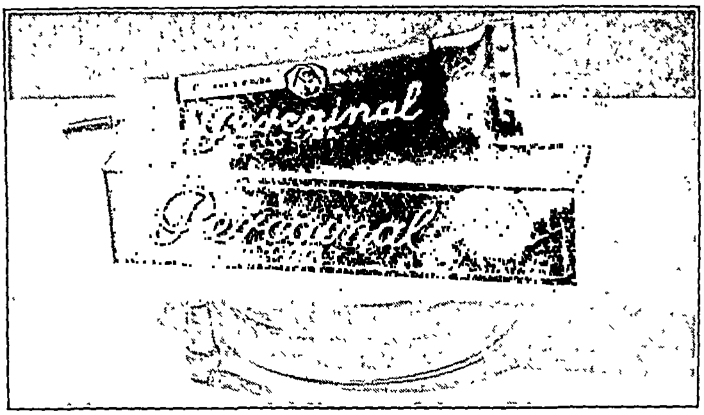

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THE LANCET

LONDON: SATURDAY, SEPTEMBER 24, 1932

THE PSYCHOLOGY OF DELINQUENCY

In his attempt to control natural processes the human agent may work by the light of tradition, by rule of thumb, or, in this scientific age, by applying the results of a careful preliminary study of the processes. Such methods failing we try to find out why. In the control of our criminals and delinquents it would be rash to say that we use even rule of thumb, for the published careers of the men tried for their share in the late mutiny at Dartmoor, with the appalling lists of repeated terms of lengthy imprisonment, exclude any empirical justification of our penal system. This is, however, so traditional that any challenge to it is likely to call up every kind of opposition—anger, derision, or imperturbability. Grafted to tradition there is a theory, based upon a belief in intelligent selfishness as the foundation of behaviour, that a well-adjusted scale of punishment suffices to ensure good conduct, that when a criminal gets what we think he deserves he will cease from crime and that fear of punishment will keep away recruits: a perfect theory with only one defect. That defect, however, prompts some people to apply the scientific method in finding out why criminals are what they are, and how society can best deal with them; to handle crime and delinquency, that is, just as we handle other urgent problems.

This scientific aim implies the study of the material, of the criminal himself; apart from the light that psychopathology throws upon social maladjustments in general, special work has been done in America by Healy and in this country by Hamblin Smith, whose book on the "Psychology of the Criminal," now recognised as a landmark in English criminological literature, we welcomed on its appearance.[1] Dr. Grace W. Pailthorpe, with assistance from the Medical Research Council, has been at work for over five years investigating psychologically the inmates of prisons and preventive and rescue homes, and her results are now available under the title Studies in the Psychology of Delinquency.[2] The cases studied numbered 200, and the completeness of the individual investigations shows a thorough command of modern psychological technique, including that most difficult of all, the removal of the suspicion that the investigator is busied with moral judgments. In the prison (Holloway) the worker was allowed easy access and seems to have received full encouragement, but it is easy to read between the lines and deduce that the authorities of rescue and preventive homes still distrust modern methods. A stipulation that the investigation was to be in mental testing alone was one of the factors that made one establishment unsuitable for the purposes of the work, and Dr. Pailthorpe notes that some of her continental colleagues, whom she visited and whose methods she describes, agreed that superintendents are very unwilling for any treatment that does not act by magic or which entails time for its fulfilment. Yet the main lesson of the report is the need for treatment. The case-histories are often long records of misery arising not merely from material circumstances, but from inner difficulties. There are 111 cases (56 prison, 55 preventive) for whom psychological treatment in one form or another is deemed necessary: in addition, mental defectives and constitutional inferiors require segregation or supervision. Dr. Pailthorpe estimates that of her prison cases 7 per cent. are unlikely to become recidivists, 43 per cent., if psychologically treated, may not become recidivists, 13 per cent. will become recidivists unless treated, perhaps permanently, in hospitals or asylums, and 37 per cent. will inevitably become recidivists unless carefully supervised or segregated.

Mental conflict, so commonly found in the cases here reported, is evidence of the presence of social sentiment, or there could be no conflict. This sentiment could, it is held, be developed by psycho-analytical treatment or intensive social education, and Dr. Pailthorpe makes the novel plea that we are wasting scientific material as well as public money and human lives. In cases where the time for reclamation, if it were ever present, has gone, she shows that public protection calls for the legal recognition of dangerous types not certifiable, and recalls the paranoid reactions of Brown and Kennedy (both of whom had undergone penal servitude and one a flogging before the murder of police-constable Gutteridge). Of this type she says, "Yet we treat him as a mentally stable individual, who will react in a normal way to correction by refraining from committing the same act again. We let him in and out of prison, to prey upon the public until he kills someone, and then we hang him!" It is time that penology was brought down from the clouds of emotion and unreason, to take its place where cause and effect are studied, and where we shall consider what is instead of what tradition tells us ought to be.

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RESPIRATORY EFFICIENCY

Surgeons are now able to get from physiologists guidance about the efficiency of the kidney before undertaking operations on the genito-urinary system and, as Dr. R. A. Young has pointed out, it would be desirable to offer them the same kind of help in the selection of patients for operation on the chest. Search has long been made for some criterion of respiratory efficiency other than the number of pillows required by a dyspnœic patient. Some rough guide may be given by observation of the rate of breathing, the shape and size of the chest, or the degree to which the accessory muscles are coming into action, and by investigation of the amount of hæmoglobin in the blood and possibly of the gases dissolved in it. Apart from these it was frankly hoped that the measurement of the vital capacity might aid the surgeon, but this help has largely foundered on the difficulty of determining a normal standard, and the same fallacy has attended the use of various indexes of ventilating power. The variations in health are too wide. Finally some reliance has been placed on the time-honoured method of determining the expiratory force, reintroduced by **MARTIN FLACK** as a standard in the selection of candidates for the Air Force. But, as Dr. **ALAN MONCRIEFF** points out in a scholarly study on another page of this issue, taken alone this test is probably of little value for the special purpose of investigating respiratory efficiency before thoracic surgery is carried out. But investigators in various lands are still hopeful. An attempt to measure the efficiency of pulmonary ventilation by studying the response to carbon dioxide has been made by **R. GOIFFON**, **R. PARENT**, and **J. WALTZ**,[1] using a spirometer of the concertina pattern to trace the respiratory movements on a revolving drum. The voluntary vital capacity and its component parts—complementary, tidal, and reserve air—is first determined and the subject then continues breathing into the apparatus in which the expired carbon dioxide soon accumulates in sufficient concentration to stimulate the respiration. When the limit of endurance is reached the extra ventilation then recorded is called the reflex vital capacity. In normal subjects with a voluntary vital capacity of more than 2 litres these workers distinguish three classes of respiration according as to whether the reflex vital capacity is above, equal to, or less than 2·2 litres; the relationship between these two values they consider of fundamental importance. For example, an athlete had a voluntary vital capacity of 4·9 and a reflex vital capacity of 4·5 litres, the latter being 90 per cent. of the former. Another subject had a voluntary capacity of 4·6 and a reflex capacity of only 2·2 litres; his "coefficient of utilisation" was only 47 per cent.

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[1] The Lancet, 1922, ii., 765.

[2] Medical Research Council, Special Report Series No. 170. H.M. Stationery Office. Pp. 113. 2s.

Whatever the value of this means of testing the ventilating power of the lungs in healthy subjects it would be asking too much of most patients to breathe into a closed space with an increasing carbon dioxide content. A somewhat less unpleasant method is that suggested by **T. R. HARRISON** and his co-workers in their description of the "ventilation index," which **F. C. TURLEY** and he [2] have recently applied to an investigation of smoking and athletics. The assumption here is that dyspnœa is proportional to the quotient ventilation/vital capacity, with a correction for weight, expected and actual. This index is determined at rest and then after a set series of exercises. It was found by comparison with previous figures determined on normal subjects and on patients after various degrees of exercise that "heavy" smoking (20 or more cigarettes a day) for several years does not significantly diminish the respiratory efficiency in the performance of mild and moderate exercise. Judged by this index athletic individuals are not much more efficient than sedentary ones in the performance of mild exertion, but are considerably more efficient in carrying out moderately severe exercise. An investigation on quite a different line is reported by **F. S. COTTON**,[3] who has studied the variation in the centre of gravity of the body during respiration to determine whether there are any sex differences in respiratory movements. This method depends on the fact that in the supine position the movements of the thorax in a vertical direction do not affect the conditions of equilibrium on the special balance employed, while in the sitting position thoracic movements during inspiration produce a caudal displacement of mass, which is indicated by movement of the balance index. If the ratio of measurement expressed as so many gramme-centimetres of mass displacement in the supine posture to that in the sitting posture be calculated, any decrease in the thoracic element must increase the ratio, while a decrease in the abdominal element of respiration will decrease the ratio. After careful corrections for various factors **COTTON** finds that there is a significant difference between the grouped results for men and women, a decreased value being found for the latter. In other words, there is evidence that women show a definitely increased use of the thorax in respiration as compared with men; a further test indicated that clothing exerted no appreciable restraint in diaphragmatic movement in the subjects examined.

In a recent paper **A. PEIPER** and **O. CAMMANN**,[4] dealing with asphyxial attacks in the premature infant, throw some new light on the behaviour of the respiratory centre. They deny that respiratory disturbances in the newly born are due to hæmorrhages in the medulla (as suggested in a recent annotation in these columns [5]), and bring forward experimental evidence to show that similar disturbances can be produced in animals when the main respiratory centre is poisoned by allowing the inspired air to consist of pure carbon dioxide or pure nitrogen. They produced a type of "gasping" respiration exactly similar to that observed in premature infants, and this they believe is due to a "gasping" centre taking control of the respiration after the main centre is put out of action by being temporarily poisoned. This block of the respiratory centre they put forward as an explanation of the respiratory disturbances in premature infants, the excitability of the main respiratory centre being put out of action by various infections, nutritional disturbances, or temperature changes.

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[1] Presse Méd., July 16th, p. 1113.

[2] Amer. Jour. Med. Sci., 1932, clxxxiii., 702.

[3] Austral. Jour. Exp. Biol., June 16th, p. 97.

[4] Jahrb. f. Kinderh., July, 1932, cxxxvi., 165.

[5] THE LANCET, August 6th, p. 298.

THE TONIC PUPIL

THE Argyll Robertson phenomenon, in which both pupils are either totally inactive or very nearly so to light, but react briskly on stimulation to convergence, is a familiar sign of tabes, and is only found in syphilitic patients. There are, however, other pupillary conditions more or less simulating the Argyll Robertson pupil to which Dr. W. J. ADIE draws attention in an enlightening contribution to our knowledge of the tonic pupil reaction.[1] It is important to distinguish these conditions, since they appear to have no connexion with syphilis nor any grave significance. They have been described by various observers during recent years under the names of tonic pupillary reaction, myotonic reaction, tonic convergence reaction of pupils apparently inactive to light, non-luetic Argyll Robertson pupil, or pseudo-Argyll Robertson pupil. Confusion is the more apt to occur since this reaction also may be associated with absence or diminution of one or more of the tendon reflexes. The essential feature of the true tonic pupil, according to Dr. ADIE, is its behaviour during and after convergence.

> "While the patient gazes at a near object the pupil, often after some delay, contracts slowly and with increasing slowness through a range sometimes greatly in excess of the normal, often down to pinhead size; having been larger, it almost always becomes much smaller than its normal fellow. After the effort to converge is relaxed one of several things may happen: the pupil continues to contract (rare), or remains fixed for several or many seconds (the rule), or begins to dilate at once (common); dilatation once begun proceeds at a rate even slower than that of the preceding contraction, and many seconds, or even minutes, elapse before it regains its usual resting size."

The reaction to light appears to be absent on casual testing, but after a long sojourn in a dark room the tonic pupil can usually be made to contract through a normal range. It is almost always larger than its normal fellow. This contrasts with the behaviour of the Argyll Robertson pupil. Where the contraction of the pupil to convergence and its return to its usual state are rapid, other points of difference are that the tonic reaction is unilateral in about 80 per cent. of the cases, whereas in the Argyll Robertson it is unilateral only in about 5 per cent. The tonic pupil is hardly ever small, and dilates to its full size with mydriatics; the Argyll Robertson pupil is small, the diameter being less than 3 mm. in 80 per cent. of cases, and dilates with difficulty to mydriatics. A large proportion of the patients with tonic pupils are healthy young females. There is no evidence of any but an accidental connexion with either syphilitic or any other disease of the nervous system. When the tonic pupil is associated with diminution or absence of one or more reflexes, loss of one ankle-jerk is the most common abnormality. Asymmetry is indeed not unusual; either knee- or ankle-jerk may be absent on one side only. The symptomatology of the condition appears to be extremely variable. Difficulty of accommodation is the only symptom likely to cause inconvenience to the patient, and it does not always occur. In Dr. ADIE's view many cases of so-called "ophthalmoplegia interna" or "iridoplegia," whose origin is obscure, are of the same nature as the disorder known as tonic pupil. In the past there may have been too great a tendency to suspect a syphilitic taint in such conditions. Dr. ADIE believes that the disorder of which they are signs is one in the production of which no known hereditary or acquired morbid factor plays a part. It runs a benign course without the incidence of further symptoms, and is compatible with long life.

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HOSPITAL SWEEPSTAKES

THE voluntary hospitals do not wish their needs to be made a pretext for the legalisation of lotteries, but on the other hand they are not opposed to legislation, and would be willing to accept money derived from properly legalised sources. This, in brief, is the message conveyed by Sir ARTHUR STANLEY in his evidence before the Royal Commission on Betting and Lotteries on Sept. 16th. Only a statistician would complain that the importance of this pronouncement is lessened by the fact that he actually submitted his statement of evidence to only a small number of hospitals (72, of which 52 replied, 40 agreeing with his views). Sir ARTHUR is president of the British Hospitals Association, and his long and intimate connexion with the work of the voluntary hospitals gives him a title to be their spokesman. His evidence may, therefore, be considered as authoritative. He holds that lotteries could best be managed and safeguarded from fraud by the appointment of a statutory body on the lines of the British Broadcasting Corporation. A percentage of the proceeds of public lotteries and sweepstakes would be set aside as a general fund, out of which grants would be made to national organisations for charity; grants to voluntary hospitals, for example, would be made through the British Hospitals Association. He believes that if large sums were given out of the proceeds of lotteries to individual hospitals there would be a tendency for charitable contributions, which now amount to £8,000,000 a year, to diminish seriously. A considerable part of that sum is given by people who oppose lotteries on principle, and who would withdraw their support, while many others would feel that their contributions were no longer needed.

Although Sir ARTHUR believes that the funds for maintenance of hospitals will continue to be contributed by the charitable public, the decline in large fortunes makes it inevitable, in his view, that large sums for capital purposes will be increasingly difficult to obtain. It is this need which he contemplates being met out of a lottery fund without danger of alienating subscribers; and the large sums of money which are at present going to Ireland would be kept in this country and spent on deserving objects at home. Sir ARTHUR's evidence shows an interesting modification of the views he expressed in our columns in May of last year. In a letter written at that time he was sceptical of the value of sweepstakes, pointing out that if £1,000,000 were available for charity as the result of a sweepstake, nearly 1000 hospitals and unnumbered charities would be clamouring for a share, thus taking most of the gilt off the gingerbread. At that time he advocated the legalisation of lotteries in which all the prizes were to be in kind and presented by donors, the whole of the cash proceeds going to the hospital concerned. He still considers that any statutory body appointed to deal with sweepstakes should have authority to licence lotteries on such lines.

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[1] Brit. Jour. Ophth., August, 1932, p. 449.

Lord LUKE, chairman of the British Charities Association, who also gave evidence before the Commission, described the efforts of the association to raise money by prize competitions; they had come to the conclusion that the public did not subscribe primarily because of the charitable aspect of appeals, but because of the attractiveness of the prizes and their confidence in the association. There was a public demand for prize competitions combining an element of chance with an element of skill. The question whether lotteries should or should not be authorised was one that should be considered on its own merits and not confused with the needs of the hospitals. If the Commission should reach the conclusion that lotteries were desirable, they had better, he said, be run by the State as a method of voluntary taxation for the benefit of the national revenue.

ANNOTATIONS

ARSENIC POISONING FROM A WINE RATION

EPIDEMICS of arsenical poisoning in any country serve as a reminder of the dangers inseparable from the use of arsenic in any form. Manufacturers and fruit growers who use arsenic as a chemical or parasiticidal agent must not be allowed to forget that owing to the solubility of nearly all arsenical salts contamination is easy and usually insidious, for the accident is rarely discovered until a number of serious and sometimes fatal cases of poisoning have occurred. Fifteen persons died in an epidemic of 500 cases due to contaminated wine at Hyères and Toulon in 1888, and in 1901 no less than 6000 cases, with a mortality of 70, due to contaminated beer were reported from Liverpool. A recent occurrence of "mass poisoning" by arsenic is the subject of an interesting communication by Caspar Tropp and Gustav Rauch.[1] The epidemic they describe concerned a French ship's crew—a small community under ideal conditions for control and scientific observation. The wine ration of the crew was 1 litre per day per man; it was proved to contain up to 12 mg. of arsenic per litre, and the characteristic symptoms of arsenical poisoning began to make their appearance about a month after the first issue of the ration. The whole crew of 32 men were affected, although only 6 of them were considered ill enough for in-patient treatment at Hamburg. When these came under the observation of Tropp and Rauch they had been drinking the wine for a period of three months, so that most of the symptoms were of chronic cutaneous type. The first case, a sailor aged 30, developed a rash on the chest, axillæ, internatal folds, thighs, and popliteal spaces, about a month after signing on. There was severe irritation and some peeling of the affected areas. Pigmentation followed subsidence of the eruption, and on the palms and soles there developed marked hyperkeratosis, with anæsthesia of the toes and pain on pressure, so that walking was impeded. At a later date gastric pain and vomiting, lacrymation, and difficulty of visual fixation developed, with loss of weight and debility. The eczematous symptoms yielded in three weeks to intravenous injections of calcium, combined with boracic compresses, and a sulphur salicylic ointment as local treatment. A blood count revealed secondary anæmia. In another member of the crew, aged 38, the symptoms were almost identical. Pain, especially of the lower extremities, was so acute that he could not tolerate the pressure of the bedclothes, and lacrymation was also a marked feature. This patient also presented a reduction both in the hæmoglobin percentage and in the red cells (3,250,000). A third patient admitted taking large quantities of wine; in his case the eruption became bullous with a strong tendency to deposition of dark pigment in the affected areas. Gastric and intestinal symptoms were also marked, and the red cells had fallen to 2½ millions. Pain in the extremities and ocular symptoms were a further feature. Three intravenous calcium injections, followed by thiosulphate of soda, from 0·6 to 1 g. (9·1 g. in all) intravenously, and calcium by the mouth controlled the symptoms after one relapse in a little more than a month. The other three cases were rather less violent in their manifestations, and displayed less hyperkeratoses on hands and feet. The intravenous calcium therapy seemed to allay the intense itching and subjective sensations in all six cases, and probably assisted elimination to a considerable extent, since arsenical eruptions and the characteristic hyperkeratoses not infrequently persist and continue to recur for weeks and months after ingestion of the poison, even under treatment with thiosulphate of soda. The possible sources of accidental arsenical poisoning are many. The chief here recorded are wine and beer (from the sulphuric acid used to invert the sugar necessary for fermentation), medicine (from the administration of salvarsan and its derivatives), and fresh fruit which has been treated for the destruction of parasites. Certain cases from the last-named cause occurred in South Africa in the autumn of last year, the victims having eaten peaches sprayed with a solution of arsenic.

THE NATURE OF CONDITIONED REFLEXES

THE great contributions to neurophysiology, made within the last few years by the schools of Sherrington and Pavlov, have been achieved respectively through the study of the decerebrate and of the normal animal. The Oxford workers have analysed the mechanism of the various reflexes to be obtained from decerebrate animals; both excitation and inhibition have been shown to be active processes. In Russia, Pavlov has investigated the reactions of an intact animal to various stimuli and the linkage of such stimuli to certain responses with such success that even in lay circles the phenomenon of conditioned reflexes is now accepted. A critical analysis of the mechanism of conditioned reflexes by a member of the Sherrington school is especially welcome, not only because it enables us to obtain a better understanding of cortical function, but because it provides a fresh stimulus to further work. Mr. D. Denny-Brown[1] contends that the term "reflex" should only be used for such responses as are inborn, fixed, unwilled, and obtainable in decerebrate preparations following stimulation of definite sensory pathways; in other words, for such responses as are dependent upon fixed anatomical pathways and are not analysed by the cortex. To obtain a true conditioned reflex it is necessary to train the animal and to habituate it to certain stimuli; further, the animal requires to receive a continuous running commentary of its actions by proprioceptive pathways and eventually "satisfaction" to the nervous impulse. In this way a conditioned reflex is more complicated, is less dependent upon inborn anatomical pathways than a spinal reflex, and is really the result of habit formation; in short, such reflexes are flexible as against the inflexibility of spinal reflexes. Is, then, inhibition of a conditioned reflex an active process analogous to that of the spinal mechanisms? It is possible that the inhibition of Pavlov may be simply a negative process dependent upon facilitation of other pathways brought about by distraction and shifting of attention. Viewed in this light, conditioned reflexes differ materially from spinal reflexes, and until our knowledge of cortical processes has been widened, it might indeed be advantageous to limit the term "reflex" to those processes which are fixed and dependent upon definite anatomical pathways and entirely independent of analysis by the cortex.

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[1] Derm. Woch., July, 1932, p. 1023.

THE RESUSCITATION OF THE STOPPED HEART

SINCE the discovery that it is possible to restore automatic activity of the heart after cardiac standstill, the various methods designed to achieve this end have often been used with zeal wrongly applied. The possibility of restoring life when death seems actually to have taken place depends on the stimulation of such delicate physiological mechanism that skilled as well as prompt handling of the patient is essential. Dr. Albert S. Hyman, who in 1930 published a paper[2] reviewing the methods generally employed in the attempt to restore normal cardiac activity, has now made a further even more valuable contribution[3] to this subject. He has devised an artificial pacemaker which has been used with success in experimental animals, and which, he claims, can in no case jeopardise a patient's condition, since its use in the normally beating heart is relatively harmless. Hitherto electrical stimulation of the stopped heart has sometimes failed because the operator has placed the whole organ in the circuit, instead of attempting to develop the electric differences of potential, and on other occasions such strong currents have been used as to produce a condition similar to electrocution. The success of intracardiac injections led Dr. Hyman to devise a new method of applying rhythmical stimulation. The effect of such injections is now attributed entirely to the prick of the needle, which generates a focal point of irritability, irrespective of the substance used; it occurred to Dr. Hyman that a special needle electrode carrying a suitable stimulating current might be applied as an artificial pacemaker with the advantage of providing an unlimited number of stimuli. It remained to find the ideal type and strength for such a pacemaker. It was necessary to make an apparatus which would (1) imitate the normal sinus impulse in difference of electric potential, speed of release, rate of discharge, and regularity of rhythm; (2) discharge this current in that part of the heart in which a nearly normal cardiac response would follow; (3) maintain a rhythmic discharge over a controllable period of time; (4) be free from the need of accessory and perishable materials; and (5) be instantly available for emergency conditions. An apparatus which appears to meet these requirements has been devised; it is not unwieldly in size, its weight being 16 lb. It is stated that the apparatus has been used clinically "though the number of patients successfully treated by this method is still very small." It is unfortunate that no case-histories are given; the claim that satisfactory results have been obtained makes it highly desirable that full details should be supplied, especially since it is suggested that the apparatus may have a wider clinical application. Dr. A. S. Parsonnet has put forward the suggestion that it might have a therapeutic use in gross cardiac irregularity, as, for example, in very rapid irregular contractures of the ventricle where all other methods have failed, and the peripheral circulation is reduced to dangerously low levels; the pacemaker needle inserted in one or other ventricle might, it is suggested, control the rate. However this may be, the artificial pacemaker certainly seems to merit extensive trial for the restoration of patients who succumb to cardiac arrest.

THE PATHOGENESIS OF INTRACRANIAL BIRTH-HÆMORRHAGE

A COMPREHENSIVE monograph by Dr. Erik Rydberg[1] presents the results of his original work on the normal and morbid histology of the brain of the new-born infant, as well as on the morbid anatomy, treatment, and prognosis of injured infants. It contains also a critical review of current opinion on the mode of origin of birth-hæmorrhage, with an account of a theory propounded by the author. Dr. Rydberg is unable to accept many of the conceptions upon which the theory of P. Schwartz is based—in particular the significance of fat-granule cells in the cerebral tissues and the production of hæmorrhage by suction effect—and a considerable part of the book is devoted to alternative suggestions which he puts forward. The first four chapters are concerned with histological considerations. In a re-examination of the development of glia in the premature and new-born infant by selective metallic methods, Dr. Rydberg finds reasons for adhering to the Central European school rather than to the Spanish. Thus he supports the Held theory of the syncytial nature of the neuroglia, and rejects Hortega's theory of the mesodermal origin of the microglia; he gives grounds for his belief that these cells originate, in common with the rest of the glia, in the medullary epithelium. The question of so-called "encephalitis congenita" of Virchow is reopened. On the basis of his researches Dr. Rydberg supports the view, already put forward by Wohlwill and others, that the occurrence of stainable fatty particles in the brain of the new-born and premature infant is normal, and is intimately connected with myelination. He suggests that the fat is diffused through the tissues in colloidal solution because, in his preparations, it has not appeared to be intracellular. Typical fat-granule cells with intracellular fatty deposits are, however, present in association with acute brain injury in the new-born. These cells may be derived from a number of sources, including microglia, astrocytes, and mesodermal elements.

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[1] Jour. Neurol. [illegible] xiii., 52.

[2] Arch. [illegible]

[3] [illegible]

[1] Cerebral Injury in New-born Children Consequent on Birth-trauma. With an Inquiry into the Normal and Pathological Anatomy of the Neuroglia. Acta pathologica et microbiologica scandinavica, Supplementum X. Copenhagen: Levin and Munksgaard. 1932. Pp. 247.

In reviewing current explanations of the mode of origin of birth hæmorrhage, Dr. Rydberg accepts the theory of Eardley Holland in so far as it applies to cases which exhibit gross alterations of the cranial shape, but he shares the common opinion that there are many cases of intracranial hæmorrhage to which it does not apply. He rejects Schwartz's suction theory on the grounds that the fœtal head is compressible and suffers a reduction in volume, and that no local expansion of the part below the compressing segment is possible. He considers that the conditions which bring about intracranial hæmorrhage are general rather than local, and he regards as particularly significant the rise of arterial pressure which Cushing has shown to accompany an increase of intracranial tension. It is to this "general circulatory strain," and the over-distension of capillaries which it occasions that hæmorrhages are attributed, but no clear explanation is given of the fact that they almost invariably occur in the venous system. Much importance is attached, no doubt rightly, to the sudden variations of pressure which occur during labour.

An analysis of the post-mortem findings on 75 cases in which death occurred at birth or in the first ten days is supplied. Grossly visible hæmorrhages were found in 58 cases; meningeal hæmorrhage was extremely common (56 cases), but usually it was of slight extent, and there was no clear evidence that it had pathological significance. In about half the cases it was associated with intracerebral or ventricular extravasations. In one case only was meningeal hæmorrhage thought to be the cause of death; Dr. Rydberg regards it as a frequent terminal event. The symptomatology of intracranial damage is discussed in relation to a series of 34 cases exhibiting definite cerebral symptoms. The post-mortem results are fully described and illustrated by some excellent photographs. Six of these brains showed no hæmorrhage, but considerable degenerative tissue change was found. Cerebral hæmorrhage was in many cases accompanied by subcutaneous and visceral effusions. Subsequent observations on children who exhibited cerebral symptoms in the first few days of life, but lived for at least one year, are included. Of the 48 cases recorded, no less than 16 showed an extreme degree of mental defect. Spastic palsies developed in some of these, and also in 6 children whose mental development was not greatly impaired.

Dr. Rydberg expresses the opinion that lumbar puncture is of limited diagnostic and of no therapeutic value; when it is indicated for diagnostic purposes, a small quantity of fluid should be removed by means of a syringe and fine needle. He regards blood transfusion as the most effective form of therapy, and advocates the injection of citrated blood into the superior longitudinal sinus. All who are interested in the problems of birth-trauma will find instruction in this monograph, particularly in the descriptions of the author's material. The theories which he propounds raise interesting speculations, but will probably not be found entirely convincing. Schwartz's theories are dismissed somewhat lightly, on arguments based on analogies drawn from simple mechanical experiment. Much consideration is given to the forces driving fluids from the fœtal head, but none to those acting on the fœtal body and driving fluids towards the head. Nevertheless it may well be that the mechanisms to which Dr. Rydberg has given prominence are important components of the complex ætiology of birth-trauma.

NOISE AND HEALTH

THAT noise has increased enormously in the past quarter of a century will hardly be disputed; whether that increase results in damage to health or in loss of working efficiency is a problem still unsolved, and raises acutely controversial questions. Certainly noise tends to be disliked, especially by those who are unaccustomed to it; but though it is commonly asserted that continuous noise diminishes efficiency and often leads to nervous disorders, very little scientific evidence has been collected in support of this opinion. In the past ten years many of the environmental conditions of industry—ventilation, lighting, heating, hours of work—have been the subject of careful investigation in relation to their effects upon health and efficiency. Very little attention, so far, has been paid to noise. Two Studies in the Psychological Effects of Noise, published this week by the Industrial Health Research Board,[1] are therefore particularly welcome. The experimental investigations reported were carried out in a laboratory and in a factory. Mr. K. G. Pollock and Prof. F. C. Bartlett measured the effect of various noises upon university students carrying out, first, tests involving a simple motor skill—e.g., inserting small pegs into holes on a moving trolley—and subsequently performing simple mental work with and without noise. On the whole it was the exception, rather than the rule, to find a marked diminution of the efficiency of performance under noisy conditions of work. On the other hand, some diminution of efficiency was consistently found in each group of experiments, and with equal consistency the introspective reports agreed that noise—especially loud mechanical irregular noise—was definitely distracting, at least at first. Two conclusions the authors regard as established: (*a*) loud noise is in general prejudicial to efficiency, and its harmfulness is roughly proportional to the difficulty of the work involved; (*b*) nevertheless the psychological and physiological effects due directly to noise have been greatly exaggerated. Many of the apparently ill-effects of noise are, they believe, probably due to social causes. When all kinds of popular statements about the baneful effects of noise are prevalent, it becomes easy for any person who is "off colour," or who fails to adapt himself to his social group, to make noise the butt of his grievance. In both the sets of experiments devised by these workers—those requiring simple motor skill and those requiring mental concentration—"adaptation" to noise was found to take place rapidly, and was apparently maintained without obvious effort for short working periods.

In the laboratory the study must necessarily be confined to such short periods, and is therefore limited to the immediate effects of noise. The factory experiment avoids this limitation but must, however, treat noise as only one of a number of simultaneously operating conditions, the effects of each of which it is not always possible to differentiate. The environment chosen in this experiment, carried out by H. C. Weston and S. Adams, was that of a Lancashire cotton weaving shed in which the noise is continuous and very considerable. Since it was impossible to quiet the looms themselves it was necessary to employ some means of reducing the audibility of the loom noise for the weavers taking part in the experiment. This was done by means of ear defenders fitted into the auditory passage. The results were measured in terms of the weavers' output, and an increase of approximately 1 per cent. was found when the loom noise was reduced. Since weaving is largely an automatic process, a small change in output may indicate a much larger change in the operatives' efficiency, and in this experiment it is concluded that the average personal efficiency of the weavers was increased by as much as 12 per cent. There is, however, some doubt whether this increase can be wholly ascribed to the reduction of noise, since the variation of temperature from week to week was such as might tend to favour production during a number of the quiet weeks. As happens so often under industrial conditions, the complete isolation of the particular factor under inquiry was impossible. A more detailed study of the hourly variations of output during the day under conditions of reduced noise reveals the interesting fact that the greater part of the improvement is to be found at the beginning of the work spells. This suggests the very important conclusion that, even after years of work in a noisy environment, the worker does not become completely adapted or acclimatised to noise, but goes through the process of adaptation daily. With the reduction of noise output shows a tendency to be more regular and less variable from hour to hour and day to day. Taken together both these experimental studies indicate that noise may exercise a disturbing effect upon human efficiency, though probably not to the extent that is commonly asserted. Further work on this subject, both in the laboratory and in industry, is essential. The reports, as is pointed out in the preface to them, open up at least as many problems as they can claim to solve.

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[1] Rept. No. 65. H.M. Stationery Office. Pp. 70. 1s. 3*d*.

SECONDARY PELLAGRA

PELLAGRA is so rare in this country that many doctors may never have seen a case. Its clinical features are characteristic, the most typical being, of course, the dark pigmentation of the skin—pellagrous dermatitis—from which the name is derived. With this skin change, present in nearly all advanced cases, though absent in some 20 per cent. of others, are associated stomatitis, diarrhœa, and mental changes; in a number of cases anæmia is also present, and, more rarely, bony changes in the form of an osteoporosis. It is now generally believed that true pellagra is a deficiency disease due to lack of some food factor which is particularly abundant in yeast, meat, milk, and green vegetables, and has been named P-P in America and vitamin B_2 *in this country*.

Recently a number of cases have been described in which signs of pellagra have developed in patients suffering from severe gastro-intestinal disease, or in whom a limited diet has been maintained over a considerable period in the course of treatment. Dr. E. H. Thaysen[1] reviews the literature on this subject, and adds a further two cases from his own experience of what has been called secondary pellagra. He has been able to collect only some 50 published cases, but it is possible that minor degrees of secondary pellagra complicating gastro-intestinal disease or dietetic treatment may occur. In most of the reported cases a diet insufficient in vitamin B_2 had been taken, but in some, though an adequate diet was given, the patient was apparently unable to absorb sufficient to prevent the onset of pellagra. In one of Thaysen's cases, for example, the patient had been taking an almost purely carbohydrate diet for a month and was then fed on a similar diet through a duodenal tube for a further 19 days—after which she developed diarrhœa, stomatitis, and brownish pigmentation of the hands, nose, abdomen, and legs, with hyperkeratosis; mental changes and osteoporosis appeared later. G. B. Eusterman and P. A. O'Leary[2] report a few cases in which similar symptoms appeared in the course of medical treatment of peptic ulcer, and other authors have noticed secondary pellagra in patients with such diseases as carcinoma of the stomach, ulcerative and "simple" colitis, and carcinoma of the bowel. In many of these cases an achylia gastrica has been found, and appears to precede the disease rather than to result from it.

The diagnosis of secondary pellagra can hardly be made in the absence of the typical dermatitis, but Thaysen draws attention to stomatitis as an early symptom of deficiency of vitamin B_2. The mental depression and apathy characteristic of pellagra seems to respond well to a diet sufficient in this food factor, and this suggests that slight degrees of insufficiency may be a factor in the mental changes common in chronic bowel diseases such as colitis. It is certain that in some cases of chronic colitis, for example, the tendency to give a carbohydrate diet may be carried to excess, and that an increase in animal protein may be of real value. In long-standing gastro-intestinal disease an adequate supply of minced or chopped meat, yeast extract, and fresh fruit juice or vegetables should be ensured.

B.B.C. TALKS

THE discreet programme of autumn talks issued by the British Broadcasting Corporation indicates that the public appetite for general medical information is to be gratified without infringing professional custom. A series of 12 talks entitled The Doctor and the Public, on Monday evenings at 7.10 P.M., will be introduced on Oct. 3rd by Sir Thomas Horder, who will ask and we may hope answer the question: What is Health? The doctor's difficulties, lay fallacies about medical matters, the management of middle age, and the surgery of yesterday, to-day, and to-morrow will be discussed by "a physician," "another physician," and "a surgeon," whose identification may well provide an agreeable evening's pastime for their listening colleagues. One can have four chances at spotting each of the physicians, only three at spotting the surgeon. On Tuesdays at 8.30 P.M. the medical directors of certain child-guidance clinics will, as far as they can, in six simple and practical talks, explain how a child's mind works—what it starts with, its place in the family circle, childish fears, instinct and habit, the child at play; and a final discussion will be held between them on how to cope with difficult children. The mechanism of the adult mind is to be the subject of talks at the same time on subsequent Tuesdays by Prof. Cyril Burt and by the president of the British Psycho-Analytical Society. Prof. Burt will speak on Nov. 8th on studying the minds of others, and a week later on studying one's own mind, and will then give place to his collaborator, who will define what is meant by psycho-analysis and the power of the unconscious, and will then explain the meaning and importance of dreams. The series, like its predecessor, will end with a discussion between the two exponents, the subject being Heart or Head? Talks by "a doctor to a mother" are arranged for Friday mornings, beginning on Oct. 7th. It is assumed, probably with good reason, that a mother will be so eager to consult this unknown doctor—whom she cannot even interrupt with questions—that she will cease firing the electric cleaner or iron at 10.45 A.M. precisely to listen for his message. Probably, however, by a minor adjustment this message could be made to coincide with the recognised break in the morning's activities known as "elevenses," when physical and mental nourishment could be taken together. Incidentally, the sound precepts which will be offered by the physician in charge of the children's department at St. Thomas's Hospital and by his obstetrical and medical collaborators, will be more diligently heeded than if they were set out by the family doctor, who can be exasperated into silence by a voluble explanation why these precepts are inapplicable to highly-strung Peter or delicate Pauline. Promised but still undated is a series of Monday evenings (9.20 P.M.) devoted to talks to unnamed listeners: during this series Mr. Gerald Heard will represent the public in putting questions "To a doctor."

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[1] Acta Med. Scand., 1932, lxxviii., 513.

[2] Arch. Int. Med., 1931, xlvii., 633.

OPENING OF THE MEDICAL SCHOOLS

IN connexion with the opening of the session at the London medical schools the following arrangements are announced:—

Charing Cross Hospital.—Prizes will be distributed on Friday, Sept. 30th, at 4 P.M., in the hospital by Mr. W. R. Halliday, LL.D., deputy vice-chancellor of the university, Mr. George Verity presiding. On the following Saturday and Sunday (Oct. 1st and 2nd) there will be a week-end post-graduate course, admission being restricted to old students of the hospital. On Saturday, at 7.30 for 8 P.M., the annual dinner of past and present students will be held at the Royal Adelaide Gallery, Gatti's Restaurant, Dr. William Hunter presiding.

Guy's Hospital.—The winter session will open on Wednesday, Oct. 5th, at 3 P.M. The Bishop of Southwark will distribute prizes and give an address on Cosmics.

King's College Hospital.—Owing to building operations in the new medical school, no formal ceremony will be held this year at the opening of the session. An intensive post-graduate course is being held on Saturday, Oct. 1st, from 2 P.M. till 6 P.M. A series of post-graduate lectures will be given in the medical school on Thursdays, at 9 P.M., from Oct. 13th to Dec. 8th inclusive, and from Jan. 12th to March 23rd. These lectures, and those held on Oct. 1st, are free to all medical practitioners. The annual dinner of past and present students will be held on Oct. 1st, at 7.30 P.M., at the Connaught Rooms, Great Queen-street, Kingsway, Dr. Godfrey de Bec Turtle presiding.

London Hospital.—A post-graduate course for former students of the hospital only will be held from Oct. 12th to 15th inclusive. The annual dinner for former students will be held at the Trocadero Restaurant on Thursday, Oct. 13th, at 7.30 for 8 P.M.

Middlesex Hospital.—The winter session will be opened in the Queen's Hall, Langham-place, on Oct. 4th, at 3 P.M., when Dr. Douglas McAlpine will deliver the introductory address on Mind and Body, and the Hon. J. J. Astor will distribute the prizes. A "Refresher Course" for former students of the hospital only will be held from Sept. 30th to Oct. 4th. On Oct. 4th, at 7.30 P.M., the annual dinner will be held at the Savoy Hotel, Mr. Eric Pearce Gould presiding.

Royal Free Hospital.—Sir Alan Anderson will deliver the inaugural address and Lady Anderson will present the prizes at the London (R.F.H.) School of Medicine for Women on Oct. 4th, at 3.30 P.M., Miss Elizabeth Bolton, dean of the school, presiding.

St. Bartholomew's Hospital.—The old students' dinner will be held in the great hall of the hospital on Monday, Oct. 3rd, at 7 for 7.30 P.M. Prof. George E. Gask will preside.

St. George's Hospital.—The prize distribution will be held on Saturday, Oct. 1st, when Dr. E. Kaye Le Fleming will deliver an address on the General Practitioner: His Relationship to the State, the Public, and His Profession. The annual dinner will take place on the same day at the Hyde Park Hotel, at 7.15 for 7.45 P.M., Sir Crisp English, F.R.C.S., presiding.

St. Mary's Hospital.—A week-end post-graduate course, open to all medical practitioners without fee, will be held from Sept. 30th to Oct. 2nd in the library of the Medical School. The annual dinner of past and present students will be held on Friday, Sept. 30th, at 7.30 P.M., at the Trocadero Restaurant. Sir Joseph Skevington, F.R.C.S., will be in the chair.

St. Thomas's Hospital.—A short post-graduate course for former students only will be held between Oct. 3rd and 7th. The old students' dinner will take place at the Dorchester Hotel, Park-lane, at 7.15 for 7.45 P.M., on Oct. 7th. Major-General Sir Guise Guise-Morris, R.A.M.C., will preside.

University College Hospital.—The winter session will open on Tuesday, Oct. 4th, when Mr. Wilfred Trotter, F.R.S., will give an address in the Library. The annual demonstrations for old students will take place on Thursday and Friday, Oct. 13th and 14th. The annual dinner will be held on Oct. 14th, at 7.30 P.M., at Hotel Victoria, Northumberland-avenue, Sir George Buckston Browne, F.R.C.S., presiding. The dinner for women students of University College Hospital will take place at the same time and day at the Piccadilly Hotel.

Westminster Hospital.—On Monday, Oct. 3rd, at 3 P.M., the winter session will be opened in the board-room of the hospital, when Mr. Spencer Leeson, headmaster of the Merchant Taylors School, will give an inaugural address on a Vision of Knowledge, Sir Henry Hadow presiding. A special post-graduate course for men graduates only is being given at the Westminster Hospital, under the auspices of the Fellowship of Medicine, from Sept. 19th to Oct. 1st. The annual dinner is to be held at Grosvenor House Hotel, Park-lane, on Saturday, Oct. 1st, at 7.30 P.M., Dr. R. Nimmo Watson presiding.

Royal Dental Hospital.—Prizes will be distributed at the hospital on Oct. 3rd, at 8 P.M., by Lord Riddell, who will give an address on How to Educate the Public about their Teeth. The annual clinical At Home will be held on Nov. 26th, and the dinner of past and present students on the same evening at the Dorchester Hotel, Park-lane, Prof. W. H. Gilmour presiding.

Details of the post-graduate courses noted above will be found in our Medical Diary.

TROPICAL HYGIENE.—The British Red Cross Society will hold a course of seven lectures and demonstrations on tropical hygiene, on Mondays, Wednesdays, and Fridays, commencing Monday, Sept. 26th, at 9, Chesham-street, Belgrave-square, London, S.W. 1, at 5.30 P.M. The course will cover such questions as food, clothing, and medical and sanitary precautions necessary for the preservation of health in hot countries.

SPECIAL ARTICLES

RONALD ROSS, 1857–1932

HIS LIFE AND WORK

RONALD ROSS was born in Almora, in the North-West Provinces, at the foot of the Himalayas. in 857, three days after the outbreak of the Indian mutiny, being the eldest of the large family of General ir Campbell Ross by Matilda Charlotte Elderton, he daughter of a lawyer in London, who at one time wned a considerable property in Brixton. The boy was sent back to England at the age of 8 and given n charge to an uncle who lived in the Isle of Wight, nd he received his early education at the Springhill School, Southampton. It is nteresting to learn from his own memoirs[1] that his early inclinations were owards geometry and the mathematics of music, or those early tastes remained with him through his life, so much so that he has himself said that there was a period when he considered his early malarial work as an episode in a medical career for which he had no great inclination.

SIR RONALD ROSS

[Photograph by Elliott & Fry

In 1875 he entered St. Bartholomew's Hospital as a medical student, and qualified as M.R.C.S. in 1879, when one diploma was sufficient for registration. He was undistinguished in the medical school and had no aptitude for clinical studies, so little, indeed, that at one point in his training he had serious thoughts of becoming an Arts student; microscopy, indeed, was the only subject of the medical curriculum which really interested him. But Sir Campbell Ross was a distinguished Indian soldier and the son of such another, and it was firmly indicated to Ross that entrance to the Indian Medical Service would give him a proper opportunity of continuing the family tradition; so in 1881, in the character rather of an obedient son than a zealous doctor, he entered the I.M.S. On arrival in India he was stationed at different times at Mysore, Bangalore. Madras, Quetta, Moulmein in Burma, and the Andaman Islands, and at all these stations he discharged his professional duties without ever, it seems, manifesting any bent towards scientific investigation. His boyish interest in microscopy was not followed up, and he spent his time in experimenting as a poet while he attacked the problems of higher mathematics with assiduity. This he did under the considerable disadvantage of an imperfect education, the creditable result being that he discovered for himself certain methods of algebraic work which were common knowledge among well-trained students. At the same time he became conscious of the relations between music and mathematics and of the close association of both with metrical composition. His artistic ambitions now found full vent. While he sent mathematical contributions in several special directions but with no success, he wrote a great deal of verse, and drafted a romance, entitled "Child of Ocean"; this novel and the poetical compositions have been republished several times and all have received eulogy for their imaginative and dramatic qualities. Ross became so absorbed in his mathematical and artistic studies that an unusually prolonged term of service without leave lost some of its hardship for him. The Indian Medical Service was at the time undermanned in its junior ranks. The Service stood high in the repute of the profession. but was not attracting young officers as it had done, and, further, included not many scientific workers apart from those who held teaching appointments at the universities. But there was no doubt of the importance of the sanitary work to be done or the strenuous way in which that work was being carried on. Ross accordingly, when, after seven years in India, his term of leave arrived. decided to remain in the career upon which he had embarked. and to employ his time in England in working for and obtaining the D.P.H., a diploma which had just been instituted by the English Colleges. He began his bacteriological studies under E. E. Klein, and in these studies he became deeply absorbed. He obtained an extension of leave in order to continue them, and in other respects his days were fully occupied, for in this year he became engaged and shortly afterwards married his wife, Miss Rosa Bloxam, while he also submitted to English publishers the MS. of his romance. He had here the usual experience of the unknown author, but just as his leave was expiring, having displayed considerable pertinacity on the point, he secured its issue on terms which he must have considered inadequate, but which appear to have been justified by the comparative failure of the work; none the less Ross was heartened by a remarkable number of favourable reviews in his belief that what he had written was worth while.

In 1890 he returned to India, definitely grounded in the science of bacteriology, and when he took up an appointment as staff surgeon at Bangalore, although his interest in literary and mathematical studies remained, he now read assiduously modern medical literature, and grasped the indefinite influence which bacteriology would have upon the prevention of tropical diseases. In 1894, the appointment of staff surgeon having come to an end, he returned to England, when various theories formed and half-formed in regard to the origin and prevention of malaria were laid before Prof. Kanthack, then pathologist at St. Bartholomew's Hospital, who introduced him to Patrick Manson. The part played by Manson, Laveran, and Ross in the elucidation of the problems of malaria is well known. Manson, whose previous work had suggested to him that the intervention of an agent like the mosquito, that is capable of piercing the skin of the human body and absorbing human blood, might prove an explanation of the spread of malaria, welcomed the discovery by Laveran of the malaria parasite as a minute organism living in the red blood corpuscles and multiplying in certain time intervals according to the particular kind of parasite concerned. But the method by which the parasite could pass from one human body to another had not been explained. Manson, from his previous experience, reasoned that the parasite, like the filaria, to pass from man to man required an *intermediary of a blood-sucking character.* He observed certain changes which the malarial organism underwent and believed them to be a manifestation of its development, and at this point he met Ronald Ross. The manner in which Ross took up the idea was characteristic of him. He was by this time a sound bacteriologist as well as an accomplished microscopist, while the vast possibilities for human life that underlay the discovery of the intervening agent between human individuals and the spread of malaria appealed with particular force to his vigorous imagination. Ross traced the connexion between the mosquito and the malaria parasite after investigations conducted under all sorts of difficulties. There was nothing to guide him as to the exact species of mosquito that was concerned in malaria, and although much theorising had been published it was necessary to investigate everything de novo. Many false scents were followed up for three years until at last, in 1898, Ross was able to describe successes in conveying malaria from bird to bird by the medium of mosquitoes fed on malaria-infected birds. The life-history of the malaria parasite was promptly worked out and to the scientific world the demonstration was complete and was immediately confirmed by experiments on voluntary human subjects in malarious zones in Italy.

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[1] Memoirs, with a Full Account of the Great Malaria Problem and its Solution. London: John Murray. 1923.

Ross, in his memoirs to which reference has already been made, tells the story from his own angle with great fullness, and his reiterated complaints of the apathy of the Indian Government in giving no facilities for the researches as they proceeded were fully justified. In 1899 he retired from the Indian Medical Service; he did so with the knowledge that his share in the grand story of prevention was one without which that story could not have been told. Nor did anyone to whom the facts were clear ever wish to gainsay this. The work of Manson, and, indeed, of other predecessors, formed an introduction; to Ross, and to him only, belongs the credit of setting out the whole truth.

On his retirement from the I.M.S. as a surgeon-major, Ross had accepted an appointment as lecturer on tropical medicine and demonstrator of tropical pathology in the school of tropical medicine just founded in connexion with the University of Liverpool. The school was only in its infancy and the appointment was very informal in that the length of tenure was not mentioned, the only guarantee given on behalf of the school being that the salary of £250 per annum would be paid for a minimum period of three years. He threw himself with ardour into his new activities. He was none the less deeply disappointed with the general reception of the fundamental explanation of the problem of malaria, and at no time did he attempt to disguise his feelings. At bottom he was terribly impatient, and could make no allowance for the fact that whole-hearted conversion in all breasts to unfamiliar doctrines could not be expected, and that until such conversion took place he would not obtain immediate support for large schemes directed to the eradication of malaria, whose probable efficiency remained in doubt. Nor could the inaccuracy of claims to priority, especially from Italy, be detected at this stage. Ross was a poor man with a young family and only a major's small pension, and he had anticipated personally a reward in grants or salary which would make the material future certain for him; he thought that the country, as well as his scientific colleagues, recognising the far-reaching implications of the new knowledge, would welcome the putting in hand at once of the vast organisation which he thought was a crying need. He could not realise that in some *places doubt was inevitable and that criticism,* until explanations were forthcoming or tests performed, must be expected; and he was too ready to see in any opposition to his views the jealousy of rivals. There is no need to dwell on this attitude, for Ross took every opportunity himself of emphasising it publicly; it is sufficient to say that, while with time there was a change of heart, in many important respects Ross's resentment was justified. Manson throughout was Ross's strenuous advocate, and too much stress has been laid on the differences which arose for a time between them. Lister, Allbutt and Osler at home, Laveran, Koch, and Metchnikoff abroad, were stalwart supporters, as were such colleagues at Liverpool as Sherrington and Boyce; but no lead came from the Government, either at home or in India, of the sort for which ample grounds had been furnished.

Ross remained in Liverpool until 1902, and was able from there to arrange visits to various places, especially Sierra Leone, where his plans for clearing up the breeding places of the peccant mosquitoes could be tried out and their efficiency proved. He thus convinced many previous critics of his soundness of view. And he now met leaders of thought and action, and was able to discuss with them the problems as they existed, and so came to perceive that those who had been, as he thought, criminally apathetic, had sometimes material reasons, which could not be disregarded, for not carrying out his designs at once or in their entirety. He lectured much, and was the guest of honour on many important public occasions, when Lister, among others, acclaimed the pertinacity and acumen of his labours and their immense promise. Manson and Osler took public opportunities of following suit, and recognition of a public sort began to pour in. He was elected to the F.R.C.S. Eng., made F.R.S., was appointed C.B. soon afterwards, and in 1902 received the Nobel prize for medicine.

In this year he retired from his post at Liverpool and was for a time in consulting practice in London, but was considerably occupied in visits to malarious regions in many parts of the world, where his advice about organised prevention had been sought. By the Colonial Office he was asked to advise on methods of prevention in Mauritius and Cyprus, and at the invitation of the Suez Canal authorities he did similar work at Ismailia. In 1911 he was promoted K.C.B. But private practice did not come with the rapidity which he had expected, and it was ascertained that a scheme for founding an institute which he would be the director would have a rong appeal for him. But before this could aterialise war broke out in Europe and Ross was ppointed consulting physician in tropical diseases r the Indian troops in England. He was next etailed for service at Alexandria in connexion with e outbreak of tropical dysentery in the Dardanelles, d in 1917 was appointed to the War Office as nsultant physician in malaria. He was promoted ll colonel in 1918, and remained at the War Office r a further year as consultant to the Ministry of ensions. At the close of the war he was created C.M.G., and returned to private practice, but is literary and mathematical pursuits occupied much f his time. The Ross Institute, in accordance with scheme set out previously, was opened by the Prince f Wales in 1926. In the following year Ross started n a long Eastern tour, visiting Malaya, Assam, and urma, and attending the inauguration at Calcutta f a monument commemorating his work—an arch earing a medallion portrait (vide THE LANCET, 927, i., 616) and set up in front of the Presidency ospital, a few yards from the small laboratory here his great discovery was made. Ross's illness ated from an attack of paralysis following his return rom that tour. In 1929 the Ross Award Fund ealised, for the succour of the declining years of imself and his wife, something over £15,000, while is manuscripts and correspondence were bought or £2000 by Lady Houston and presented to the nstitute. Lady Ross died almost exactly a year go.

Among the many honours which Ross received nd appointments which he held there may be numerated, in addition to those mentioned, honorary octorates from Dublin, Leeds, Stockholm, and thens; he was a member of a colonial office dvisory committee, and of the advisory board f the Indian Research Fund. His professional riting was not voluminous. He wrote a book n the prevention of malaria, and many papers on his subject appeared in the *British Medical Journal* nd some in *The Lancet*, while his own contributions o *Science Progress*, which he edited for a time, illusrated a curiously Pythagorean approach to science nd the arts, especially music and metrical composiion. His novels and his volumes of verse were issued in several editions and obtained praise in many quarters. His longest work was his Memoirs, an nteresting and candid book, containing a full account of the various stages which culminated in his great discovery, interspersed with many excerpts from his poetry.

Sir Ronald Ross's long and hopeless illness ended on Sept. 16th with his death at his quarters in the Institute at Putney, where he directed the enterprise founded to commemorate his work. In him medicine has lost a great man and the world one whose work has already produced incalculable benefits while still its potentialities remain undeveloped.

RADIUM THERAPISTS VISITING CLUB.—At the invitation of Dr. Ralston Paterson a meeting of radium therapists was held in Manchester last week-end. Though not primarily a clinical meeting, the visitors from other centres in England, Scotland, and Ireland were given an opportunity of seeing something of the technique and methods of the team of workers at the Manchester and District Radium Institute. The week-end included a visit to the Metropolitan Vickers Electrical Engineering Works. Dr. A. Burrows was elected president of the newly inaugurated Radium Therapists Visiting Club, and Dr. Ralston Paterson secretary and treasurer.

MEDICINE AND THE LAW

The Medical Problems of Accident Insurance

THE law of accident insurance is constantly supplying problems for the practitioner. By far the greatest number of accidents which he is called to treat arise "out of and in the course of" the patient's employment. A fair proportion of the remainder, particularly the serious ones, are street accidents, and many of those which occur in the home are covered by newspaper insurance schemes. Almost invariably the doctor's opinion is sought in the first place on the three great questions of duration of incapacity, liability, and compensation. It may be argued that the "liability" and "compensation" are subjects for discussion only with a lawyer, but in practice it is found that they play an important part in influencing the course of treatment and the progress towards recovery. A recent monograph[1] provides an admirable outline of the law in a manner most suited to the combined needs of intelligent laymen and lawyer. Much of the subject matter written is primarily the concern of insurance companies and lawyers, but several chapters should be of the greatest help to the doctor. The question of liability, in so far as it is a purely medical issue, is dealt with fully under the headings The Doctrine of Proximate Cause, and Personal Accident Insurance. A useful reminder is that it is necessary to distinguish between the immediate or proximate cause, the "causa causans," and the remote cause, or "causa sine qua non," which only indirectly causes a loss or injury in that, if it had not come into operation, the direct cause of the loss would not have come into operation either. A patient insured against a specific accident or disease, who subsequently develops another condition, is thus entitled to compensation if there is no break in the sequence of events leading from the original cause of his disability until the last cause. Where for example an accidental fall from a horse has been followed by disease, either caused by the fall itself, or directly attributable to the enfeebled condition of the assured in consequence of the fall, the death, though caused by disease, is proximately caused by the accidental fall. The operation of the doctrine of proximate cause is not effected by the number of causes that may intervene between the peril and the loss; thus a scratch may produce septicæmia, which in turn develops into septic pneumonia, and results in death. Here there is a definite chain of events leading from a scratch to death, and death is proximately caused by a scratch. If, on the other hand, the sequence of causes is interrupted by the intervention of a fresh cause, the cause of the loss within the meaning of the insurance policy is not the peril insured against, but the intervening cause. It is immaterial, if, by reason of the accident, the patient has been rendered more susceptible to the operation of the intervening causes; thus, where a person weakened by a railway accident is run over by a omnibus, which, owing to his weakness, he is unable to avoid, his death is due, not to the railway accident, but to the street accident. Where there is more than one cause of death or disablement, and where the causes are concurrent in their operation, the loss is probably as much due to one cause as to the other. If, therefore, one of the causes has been insured against, the loss within the meaning of the policy is attributed to the insured cause, and the presence of the concurrent cause, and the fact that it, too, may be the cause of loss is disregarded. It is therefore immaterial whether the onset of the uninsured cause preceded or followed the peril in point of time. Where the assured is drowned whilst bathing, his death is caused by accident, and it is immaterial that he fell into the water in a fainting fit, although the water was so shallow that he would not have been drowned unless he had been unconscious.

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[1] Welford's Accident Insurance. Second edition. By A. W. Baker Welford, of Lincoln's Inn, Barrister-at-law. London: Butterworth and Co. 1932. Pp. 612. 37s. 6d.

The majority of insurance policies against accident describe the insured injury "to be caused by violent, accidental, external, and visible means." Mr. Welford states that as far as the nature of the policy is concerned, these words probably add nothing to the idea defined by the word accident, since they merely give expression to the essential features of an accident. He goes on to take each word separately, and defines it at considerable length, quoting a large number of decisions—e.g., violence means "without any violence at all," and merely expresses that the injury is due to other than entirely natural causes. An injury was held to be violent, in which the man merely stooped down to pick up a marble, but in so doing he dislocated the internal cartilage of his knee-joint. Another patient, whilst taking off his socks, scratched the skin of his leg with his nail, and ultimately died from the consequences of erysipelas. "External" does not apply to the injury, but to the means which produces the injury; thus, a patient lifting a heavy weight injured his spine, and although his injury was entirely internal, the cause which produced this injury was lifting a weight and therefore external.

A great difficulty in medico-legal work seems to be in finding a satisfactory definition for "accident." Mr. Welford, on p. 168, says "the word 'accident' involves the idea of something 'fortuitous' and 'unexpected,' as opposed to something proceeding from natural causes; an injury caused by accident is to be regarded as the antithesis to bodily infirmity caused by disease in the ordinary course of events." The injury may be a natural result of "a fortuitous and unexpected cause"—e.g., where the assured is run over by a train; or the injury is a fortuitous and unexpected result of a natural cause, where the patient stoops to lift up a heavy burden in the ordinary course of business and injures the spine. On the other hand, an injury is not caused by accident if it is the natural result of a natural cause—where a person with a weak heart injures it by running to catch a train. Students of the trend of judicial decisions in workmen's compensation cases will know that in this type of statutory "accident" the House of Lords has expressly declined to regard a "fortuitous and unexpected" element as a criterion.

A special paragraph (p. 272) deals with surgical operations.

> "If a patient is operated upon, and dies as a result of operation, the immediate cause of death is to be disregarded, and the death of the assured is to be attributed to the circumstances which rendered the operation advisable."

If a patient was suffering from a disease for which he were operated upon, his death is due to disease and not accident. If, on the other hand, the operation has been undertaken to alleviate the consequences of accidental injury, his death is death from accident, within the meaning of the policy.

Chapter 18 is devoted to Employers' Liability, and section 4 of this chapter deals with the Workmen's Compensation Act of 1925. The practitioner often has great difficulty in deciding whether a particular injury is due to accident "arising out of, and in the course of his patient's employment." In the multitude of cases quoted here, it seems that the law is strained in favour of the workman, which cannot be better illustrated than by quoting the second paragraph of p. 547:—

> Where there is no accident in the strict sense of the word, but the combined effect of the workman's physical condition and of the exertion involved in the work upon which he is engaged is to produce death or disablement, the death or disablement is to be regarded as caused by accident within the meaning of the statute. In this case, it is immaterial that the work involves no unusual strain or exertion, or that the workman's physical condition is such that, in itself and apart from the exertion involved, it might have produced the same injury, since the death or disablement, happening as and when it does, is, in fact, the unexpected and undesigned consequence of the workman's act, and accordingly the element of accident is introduced. Thus, where a workman suffering from an aneurysm ruptures it whilst tightening a nut with a spanner, it is immaterial that no more than ordinary exertion was used, or that the aneurysm was so advanced that the workman might have died even in his sleep. (Clover, Clayton & Co., v. Hughes, 1910.)

In the Workmen's Compensation Act of 1925 it was also laid down that a workman must submit himself to as many medical examinations as his employer may wish at the hands of the medical man whom his employer may nominate. In practice it is often found that the medical practitioner is unwilling for his patient to be examined by a second doctor without his being present, which usually means an additional fee payable by the employer: in fact neither the doctor nor the workmen have the right to insist that the panel doctor be present. The index of this useful work seems to be confined solely to legal and insurance terms. Its value, from the medical point of view, would be increased very greatly if there were an index of medical diseases, such as aneurysm, which are mentioned in the text or in the cases quoted. The cases themselves are conveniently tabulated at the beginning of the book.

The Checking of Swabs

At a recent inquest upon the death of a woman in Southport Infirmary post-mortem examination showed that she died from pelvic peritonitis. Death occurred after an operation at which it was discovered that a swab used at a previous operation had been left in the body. It was explained to the coroner's jury that the swabs were brought into the operating theatre in bundles of six contained in drums. On the occasion of the operation in question the sister in charge seems not to have counted the number in each bundle, but to have assumed that each drum contained six swabs as usual. The only explanation of the omission to remove the swab from the body was that the swabs in use were duly checked as contained in each drum of six, but that one drum must have contained seven. The jury very naturally suggested that some system should be adopted whereby such an accident could not possibly happen again. If any system could be evolved which was proof against human error, it would of course be taken into use at all surgical operations; meanwhile the need of supreme care in the checking and removal of surgical appliances and dressings is a lesson which no one must be allowed to forget.

Third Degree Allegations

The *Times* of Sept. 8th prints an account from its New York correspondent of the arrest of a deputy sheriff on a charge of murder in connexion with the death of a prisoner in custody. The prisoner, named Virant, had been arrested on suspicion of being concerned in a murder in a "speakeasy." At the coroner's inquest Virant complained that the police had nearly killed him in their endeavours to make him confess the murder of which he knew nothing. He said he had been struck on the head, and he thought two of his ribs had been broken. "They took turns working on me." The deputy sheriff of a district of Illinois, whose arrest for the murder of Virant is now reported, "knocked me down and kicked me, and jumped on my neck." Virant is said to have been found hanged in his cell. A pathologist who examined his body on behalf of the public authorities said that death was not due to strangulation, but had resulted either from beating or from the effect of "knock-out drops," sometimes used by the police to obtain finger-prints from unwilling prisoners, or from a combination of both.

The truth of these allegations will no doubt be carefully examined. In England the public is extremely sensitive to any suggestion of "third degree" methods on the part of the police. It will be recalled that the suggestion of unfair methods was one of the issues inquired into and reported upon by the commission on police powers, set up after the Savidge incident in Hyde Park a few years ago, and presided over by Lord Lee. The admirably written report of the commission is a public document of no little importance. As is well known, our English police force is comparatively modern when contrasted with the antiquity of our criminal institutions. Before the beginning of the nineteenth century the justices of the peace used personally to concern themselves with the investigation of crimes and the apprehension of suspected persons, while the local constables remained much as Shakespeare has depicted them for us. The evolution of a special force of police with statutory powers of arrest and apprehension and a technique of criminal records has thrust the justices back into a mainly judicial position in these matters. If transatlantic methods of extracting evidence by non-judicial methods goes far beyond anything which this country would tolerate, there are many in England who think that the elaborate safeguards of the liberty of the subject deprive our English police of powers which they need for bringing offenders to justice. The cautionary formula to a suspected person, necessary before any use can be made of his statement or of his answers to questions, undoubtedly makes the task of the policeman difficult. The Home Office has officially repudiated any suggestion that these safeguards unfairly handicap the police or are responsible for the non-discovery of criminals who might otherwise be detected and punished; the police force, however, possibly takes a different view.

The Coroner's Office in Bombay

The Illinois case, noted in the preceding paragraphs, illustrates the remarkable value of the coroner's office as a part of the machinery of criminal investigation in all countries which have taken over these historic items of the English system. The latest issue of the *Journal of Comparative Legislation* (just published), in giving the usual annual summary of statutes recently passed in various countries, happens to deal with the office of coroner in the Presidency of Bombay. The law relating to coroners has remained in force unamended in Bombay for nearly 60 years, and was based almost entirely upon the old principles of the law in England. A recent amendment (Act No. 13 of 1930) makes several changes. A coroner in Bombay need now no longer empanel a jury for every inquest. He need not hold a separate inquest on each of several persons who have met their death in one common accident. If satisfied by preliminary inquiry as to the cause of death, he can permit the body to be disposed of. A suspected person is no longer to be treated as an accused person in the coroner's court where, of course, the investigation is general, and where no formal charge has been preferred against a named individual. A coroner is also now to be equipped with powers for dealing with cases of contempt of court. Finally, proceedings before a coroner can now be stayed where criminal proceedings before a magistrate are under way. Thus Bombay has adopted some of the improvements introduced in England by the Act of 1926.

SOUTHEND GENERAL HOSPITAL

THE new general hospital at Southend-on-Sea, which was formally opened on July 26th, will, it is expected, be ready to receive patients towards the end of next month. The hospital serves an area, including Southend, Westcliff, and Leigh, stretching for seven miles along the Essex coast, which has quickly developed into a residential area and holiday resort for Londoners who have elected to live by the sea where it comes nearest to the metropolis. Shortage of accommodation at the local voluntary hospital in Warrior-square, built as a memorial to Queen Victoria's Jubilee and increased by stages up to 96 beds and cots, led to an influx of patients at the Rochford poor-law hospital where the accommodation has been taxed to the utmost. Eight years ago the community was faced with the alternative of admitting that the principle of maintaining a general hospital by voluntary subscriptions had failed, and falling back on the provision of a municipal hospital under the Public Health Acts, or of making a colossal effort to provide a voluntary hospital with 200 or more beds. At this stage, as is common knowledge, Lord Iveagh came to the rescue with the gift of a site of twelve acres in the Prittlewell district, and contributions to the funds amounting from first to last to a total of nearly £100,000. Others were stimulated to benefaction: Mr. E. Cecil Jones gave £10,000 towards a children's wing, Alderman A. Martin offered a life interest on £58,000 for maintenance, with the capital sum on his death. Sums of money came in sufficient to name all the cots in the children's wing.

The site of the hospital slopes gently towards the south, the main entrance being on the southern boundary. As will be seen from the aerial view, the administration block lies centrally with the main corridor running east and west, giving access to the ward blocks, three storeys in height, with flat roofs and large open-air balconies at the southern end. On the left is seen part of the children's block, two storeys in height, which lies east and west. The main ward blocks are at present two in number, space being left for two further blocks which will increase the number of beds by 180 up to nearly 400. The beds are allotted as follows: 60 each for general surgical and general medical cases, 24 maternity cases, 21 paying beds, 8 for eye cases, 2 for casualties, and 44 for children. A feature of the wards is the arrangement of the beds. The arrangement, familiar enough in America, was novel when introduced by the same architects, Messrs. Adams, Holden, and Pearson, in the design for the Birmingham hospitals centre;[1] and has since been adopted by the New Sussex Hospital for Women and Children, of which we reproduce an illustration from THE LANCET of 1931,

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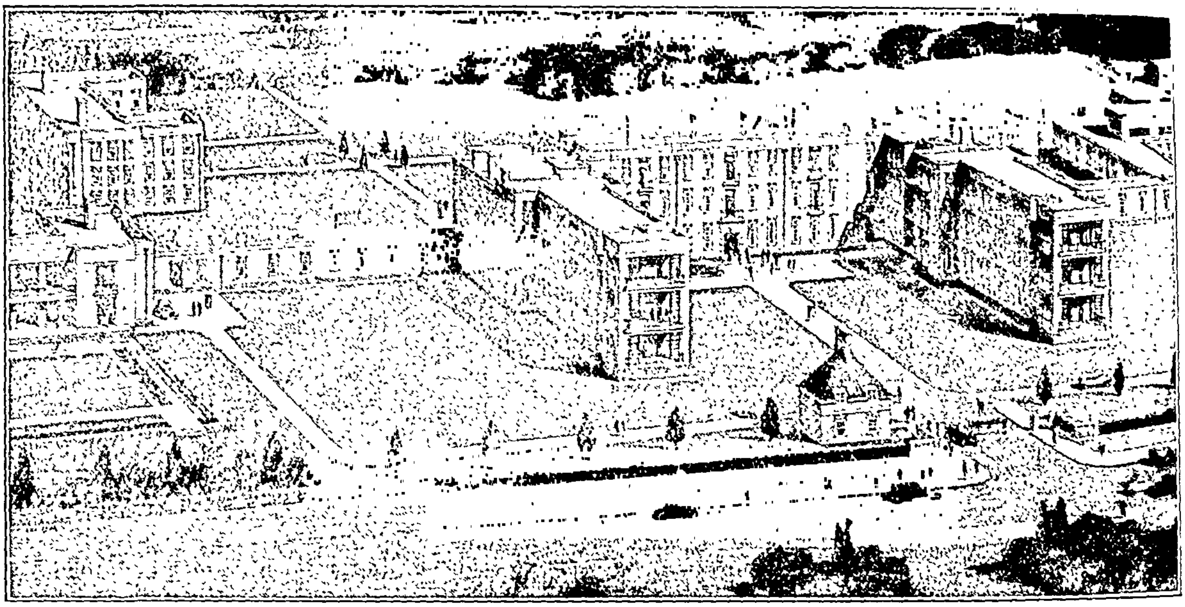
[1] See THE LANCET, 1930, i., 318.



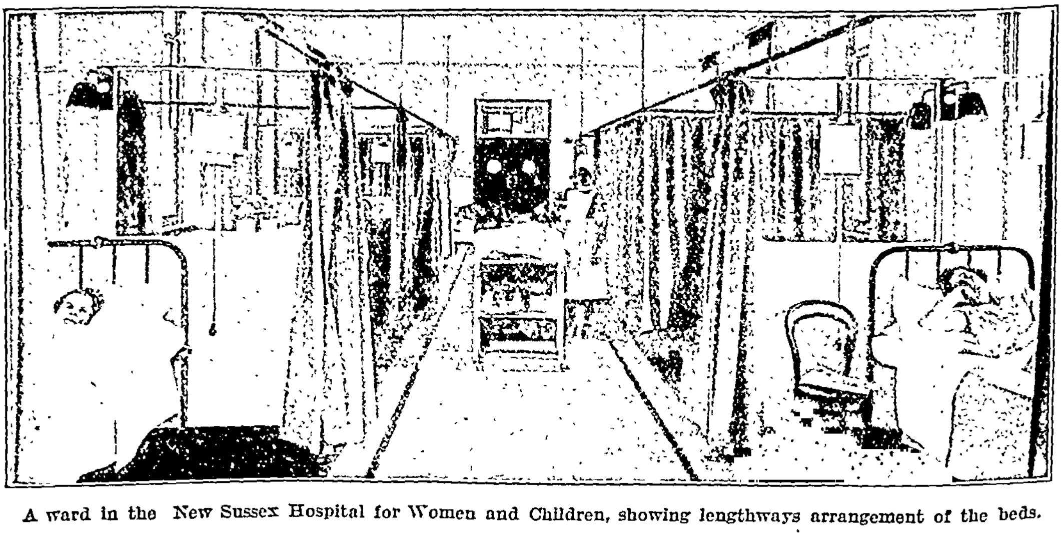
Aerial view of the new General Hospital at Southend-on-Sea.

i., 1382, to show its attractive features. In the usual hospital ward the beds are placed at right-angles to the walls so that the patient is facing the light from the opposite windows and has the radiator near the head instead of the foot of the bed. On the new principle the beds are placed in pairs, parallel to the wall with a window to each bed, separated by a series of partitions of metal and glass connected by rods which enable curtains to be drawn on the corridor side, thus obviating the need of portable screens. Channels in the screen carry the wires for light and listening in, and everything is given a flush finish to facilitate cleaning.

In the children's block all the wards have large folding-doors opening on the balconies so that in fine weather they can be thrown completely open to the south. In this block there are large glass windows between the various wards for complete supervision. The buildings are faced throughout with hand-made local bricks which have considerable variety in colour and texture, thus adding to the interest of the necessarily simple elevations. String-courses and key-stones are in artificial stone, real Portland stone being used in exposed positions such as window-sills and copings. The design was considered of sufficient interest and merit to occupy the whole of a supplement to the *Architects' Journal* for July 20th.

The intention had been to leave the out-patient department at the Victoria Hospital, but this would have complicated administrative problems, and there is now a complete department at the new hospital with six consulting rooms, ophthalmic room, minor operating theatre, dispensary, and medicine room. It is hoped to organise appointments so as to avoid overcrowding and long waiting, and by coöperation between practitioners and hospital staff to ensure to all the personal-timed consultations which are generally available for private patients.

The top floor on the men's side contains 21 beds for paying patients, in wards of 4, 2, and 1 bed each. The intention is to build later an east wing similar to the children's wing on the west to accommodate at least 80 private patients. No contributory scheme for the general hospital has been yet definitely



A ward in the New Sussex Hospital for Women and Children, showing lengthways arrangement of the beds.

arranged, but it is proposed that a person within certain income limits, by paying a regular sum weekly or monthly, can receive treatment without charge. It is claimed with some justice that there is no more complete provincial voluntary hospital in the country, and at the official opening Dr. L. Gordon Hopkins, chairman of the medical advisory committee, referred to three features of the hospital which were to some extent innovations. The first of these was the introduction of a complete specialist medical staff; secondly, the provision of pay beds to meet the needs of members of the community who could not afford nursing home fees and yet found charity distasteful; and thirdly, the setting up of a maternity service where the dangers of the pre- and post-natal periods could be successfully combated.

The staff of the hospital so far as at present appointed is as follows:—Hon. Physicians: Dr. William Evans, Dr. T. Rowland Hill, Dr. R. S. Johnson, and Dr. A. D. Porter. Hon. Surgeons: Mr. Rodney Maingot, Mr. R. H. Campbell, and Sir William Wheeler. Hon. Dermatologist: Dr. A. Burrows. Hon. Radiologist (Diagnostic): Dr. H. Cecil Bull. Hon. X Ray Therapist: Dr. M. H. Jupe. Hon. Ophthalmologist: Dr. D. D. Evans. Hon. Ear, Nose, and Throat Surgeon: Mr. C. Hamblen Thomas. Hon. Orthopædic Surgeon: Mr. B. Whitchurch Howell. Hon. Anæsthetists: Dr. A. P. Cogswell and Dr. W. E. Robinson. Hon. Gynæcologists: Mr. H. Burt-White, Mr. J. Lyle Cameron, and Mr. F. Neon Reynolds. Pathologist: Dr. C. F. Freezer. Pharmacist: Mr. A. C. Adamson. An hon. physician to the electrotherapeutic department is still to be appointed.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE PUBLIC HEALTH POLITICAL PARTY

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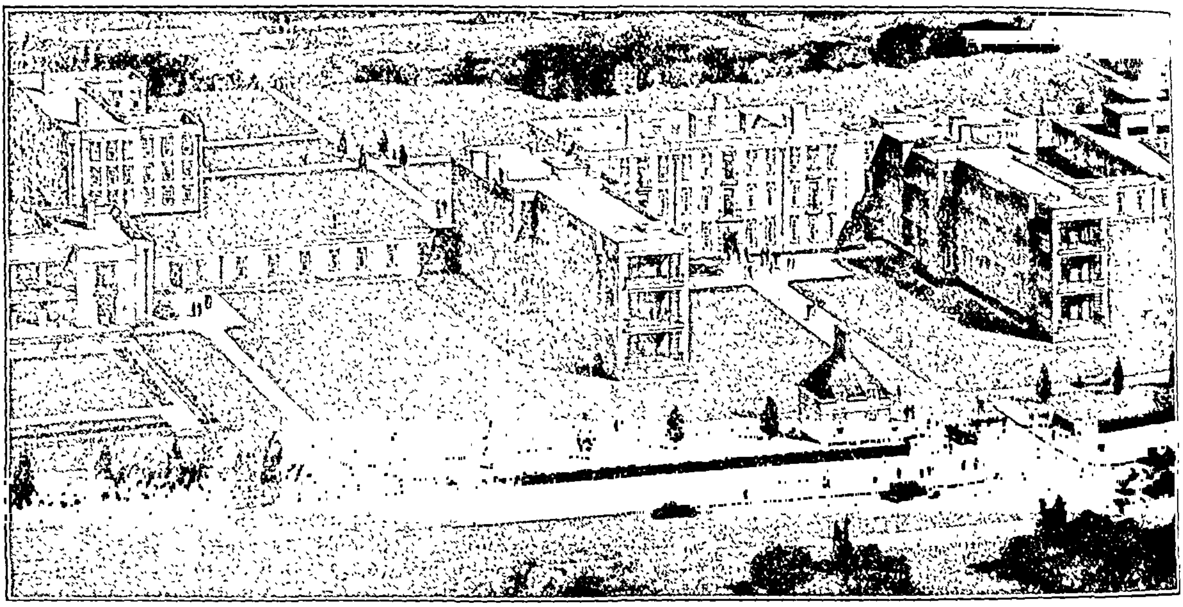


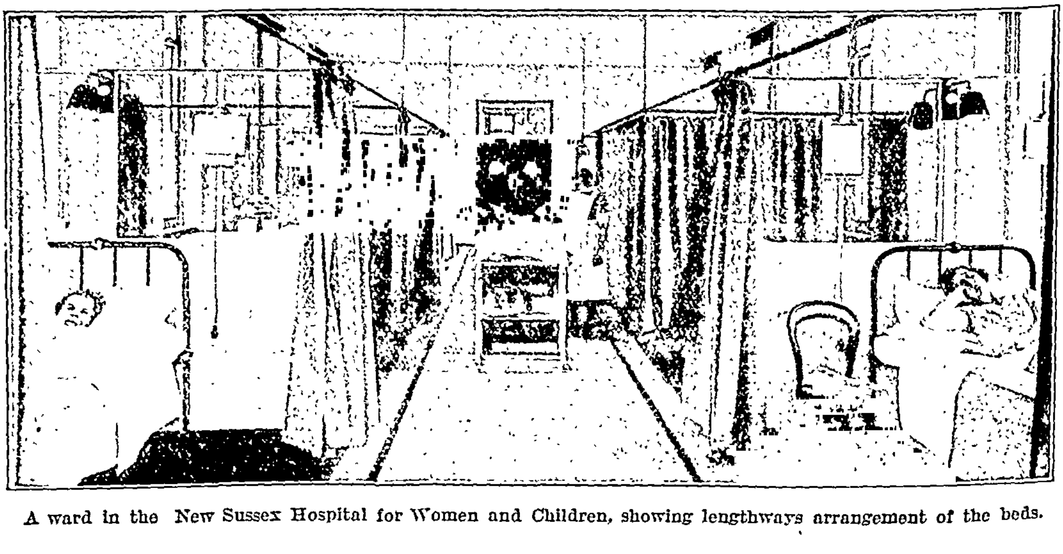
Aerial view of the new General Hospital at Southend-on-Sea.

i., 1382, to show its attractive features. In the usual hospital ward the beds are placed at right-angles to the walls so that the patient is facing the light from the opposite windows and has the radiator near the head instead of the foot of the bed. On the new principle the beds are placed in pairs, parallel to the wall with a window to each bed, separated by a series of partitions of metal and glass connected by rods which enable curtains to be drawn on the corridor side, thus obviating the need of portable screens. Channels in the screen carry the wires for light and listening in, and everything is given a flush finish to facilitate cleaning.

In the children's block all the wards have large folding-doors opening on the balconies so that in fine weather they can be thrown completely open to the south. In this block there are large glass windows between the various wards for complete supervision. The buildings are faced throughout with hand-made local bricks which have considerable variety in colour and texture, thus adding to the interest of the necessarily simple elevations. String-courses and key-stones are in artificial stone, real Portland stone being used in exposed positions such as window-sills and copings. The design was considered of sufficient interest and merit to occupy the whole of a supplement to the *Architects' Journal* for July 20th.

The intention had been to leave the out-patient department at the Victoria Hospital, but this would have complicated administrative problems, and there is now a complete department at the new hospital with six consulting rooms, ophthalmic room, minor operating theatre, dispensary, and medicine room. It is hoped to organise appointments so as to avoid overcrowding and long waiting, and by coöperation between practitioners and hospital staff to ensure to all the personal-timed consultations which are generally available for private patients.

The top floor on the men's side contains 21 beds for paying patients, in wards of 4, 2, and 1 bed each. The intention is to build later an east wing similar to the children's wing on the west to accommodate at least 80 private patients. No contributory scheme for the general hospital has been yet definitely



A ward in the New Sussex Hospital for Women and Children, showing lengthways arrangement of the beds.

arranged, but it is proposed that a person within certain income limits, by paying a regular sum weekly or monthly, can receive treatment without charge. It is claimed with some justice that there is no more complete provincial voluntary hospital in the country, and at the official opening Dr. L. Gordon Hopkins, chairman of the medical advisory committee, referred to three features of the hospital which were to some extent innovations. The first of these was the introduction of a complete specialist medical staff; secondly, the provision of pay beds to meet the needs of members of the community who could not afford nursing home fees and yet found charity distasteful; and thirdly, the setting up of a maternity service where the dangers of the pre- and post-natal periods could be successfully combated.

The staff of the hospital so far as at present appointed is as follows:—Hon. Physicians: Dr. William Evans, Dr. T. Rowland Hill, Dr. R. S. Johnson, and Dr. A. D. Porter. Hon. Surgeons: Mr. Rodney Maingot, Mr. R. H. Campbell, and Sir William Wheeler. Hon. Dermatologist: Dr. A. Burrows. Hon. Radiologist (Diagnostic): Dr. H. Cecil Bull. Hon. X Ray Therapist: Dr. M. H. Jupe. Hon. Ophthalmologist: Dr. D. D. Evans. Hon. Ear, Nose, and Throat Surgeon: Mr. C. Hamblen Thomas. Hon. Orthopædic Surgeon: Mr. B. Whitchurch Howell. Hon. Anæsthetists: Dr. A. P. Cogswell and Dr. W. E. Robinson. Hon. Gynæcologists: Mr. H. Burt-White, Mr. J. Lyle Cameron, and Mr. F. Neon Reynolds. Pathologist: Dr. C. F. Freezer. Pharmacist: Mr. A. C. Adamson. An hon. physician to the electrotherapeutic department is still to be appointed.

PARIS

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BERLIN

(FROM OUR OWN CORRESPONDENT)

FOREIGN ASSISTANTS IN GERMAN HOSPITALS

THE Association of Hospital Assistants has lately complained of the employment in numerous hospitals of medical men with foreign diplomas, although there is no lack of recently qualified Germans who would be glad to work as assistants, for no one is admitted to club practice without having served for three years in a hospital. The Minister of Public Welfare has stated that in Prussia, apart from the university clinics for which the Ministry of Education is responsible, there are 103 hospitals in which altogether 145 foreign medical men are employed. Of these hospitals, 35 belong to religious corporations, 17 are private, and the remainder are municipal or public. The Minister has been informed that certain foreign medical men have acted as if they were duly qualified in Germany: they have prescribed "dangerous" remedies, they have given certificates of death and opinions for law courts, they have attended patients with venereal diseases, thus rendering themselves liable to penalties. The Minister has instructed local authorities that they are not authorised to employ or let employ foreign medical men, that those at present employed are to be discharged and Germans appointed in their stead. The Minister added that there is no reason to prevent foreign medical men from working, as heretofore, voluntarily for the purpose of study under hospital surgeons and physicians.

HOSPITAL STATISTICS

According to statistical records taken by Dr. Dornedden of the German Statistical Office and published in the Reichsgesundheitsblatt, the number of lying-in hospitals and clinics is three times greater than before the war. The obvious reason is that women increasingly prefer to be delivered in an institution where the expenses are not much higher and the trouble is smaller than at home confinements. The number of other hospitals has increased, and the number of beds in still higher proportion, so that, generally speaking, the hospitals have increased in size. While in 1913 4·3 beds existed for each 1000 of the population, that number was 6·2 in 1930. Hamburg has relatively the greatest number of hospital beds. Until 1929 the number of patients constantly increased, but in 1930 for the first time a decrease was recorded. Reasons of the decrease are (1) the lessened incidence of illness, especially of influenza, and (2) the economic situation which compels patients, particularly those belonging to the Krankenkassen, to keep out of hospital as long as possible. The largest call on hospital beds is made by cases of injury. Injuries of the skull, the vertebral column, and the pelvis have become more frequent owing to the rising number of severe motor-car accidents. Diseases of the female sexual organs, abortions, and tuberculosis have considerably increased too, and so has appendicitis, where fortunately the mortality is only one-third what it was before the war. Diabetes and gastric ulcer have increased, enteric fever and venereal diseases diminished. Circulatory troubles have become more frequent, inasmuch as the average age of the population has become higher since the war.

REMOVAL OF THE SPLEEN

Prof. Mühsam, chief surgeon to the Virchow Hospital in Berlin, writes that up to 1894 only 121 cases of splenectomy were recorded, but that the indication for that operation was then greatly extended when it was ascertained that certain blood diseases—e.g., leukæmia, Banti's disease, and thrombopenia—were cured or improved by it. He has himself performed splenectomy for ruptured and migrating spleen, for aneurysm of the splenic artery, splenic abscess due to embolism or complicating enteric fever, tuberculosis, and echinococcic cysts. In syphilis splenectomy is indicated if antisyphilitic treatment has been unsuccessful and pain is severe; in malaria, too, it may be necessary to relieve the pain of an enormously enlarged spleen. Pernicious anæmia is, he thinks, no longer an indication for splenectomy since liver therapy has proved so successful. Of 60 splenectomies of his own 29 were cured and 31 died.

UBIQUITY OF PFEIFFER'S BACILLUS

Dr. Gundel and Dr. Linden, as a result of investigations at the hygienic institute of Heidelberg University, find Pfeiffer's bacillus in all kinds of acute disease of the respiratory organs in non-epidemic periods. In younger children the presence of the bacilli is transitory, but older children and adults carry them longer than do actual cases of influenza. The bacillus lives as a saprophyte on mucous membranes, becoming virulent when the resistance of the organism is diminished.

THE CURABILITY OF SARCOMA

Dr. Hintze lately read a paper before the Berlin Medical Society recording 678 cases of sarcoma attended in the University surgical clinic during the last 18 years; of these 214 were still alive after five years. This success was due in one-third of the cases to operation and in two-thirds to radiotherapy. Cases in which an operation was done without radiotherapy were successful in 28·7 per cent.; with radiotherapy combined with operation the percentage was 33·2. The best results were recorded in cases where prophylactic irradiation was performed, the number of cures being 39 per cent. The choice of operation or radiotherapy, or both combined, depends on the position of the growth. In sarcoma of the mamma and of the extremities amputation followed by irradiation is indicated. In sarcoma of the hypophysis, tonsils, pelvis, and spleen, and in malignant lymphoma, cures were obtained by radiotherapy only. No test excision ought, he thinks, to be made without a following application of rays. Chances of cure increase with improvement of technique and greater experience.

In the Reich only eight leprous patients are registered. One new case from abroad was conveyed to the medical clinic of Giessen University; one case has left the country and one has died. So that the number is now only seven.

PUBLIC HEALTH SERVICES

Defective Vision in School-children

At the present time the method used to detect visual defects in school-children is a test of visual acuity; children who read 6/6 or 6/9 are passed as normal, others are referred for testing by refraction. In addition, a certain number of children are tested by refraction because of squint or of such symptoms as migraine, blepharitis, conjunctivitis, and headache. Dr. A. A. Douglas, school oculist for Ealing, suggests that this method has certain drawbacks, the chief of which is that many cases of defective vision are not detected by it. Thus many children with hypermetropia, even of high-grade hypermetropia, go uncorrected. More important, cases of early myopia and astigmatism are not submitted for refraction until some diminution in visual acuity of vision calls attention to them. The committee of inquiry into problems connected with defective vision in school-children found that in unselected children the percentages were:—

Simple myopia ..	2·4	Mixed astigmatism ..	1·2
Myopic astigmatism ..	0·8	Simple hypermetropia ..	64·2
Hypermetropic astigmatism	13·9	Emmetropia	5 8
		Anisometropia ..	11·7

If these percentages are applied to the total number of school-children in a locality the expected number in each of the groups can be compared with the actual number on the records of the school oculist, correction being made for the children (estimated at 10 per cent. of the total) who receive ophthalmic treatment privately. Taking the total number of school-children in Ealing as 12,100, Dr. Douglas finds the expected and actual numbers of the more important refractive abnormalities to be these:—

	Expected.	Actual.
Simple myopia..	298	118
Myoptic astigmatism	94	45
Hypermetropic astigmatism ..	1696	235
Mixed astigmatism	100	75

It is rather disturbing, he says, to find that the actual numbers of children with myopia and myopic astigmatism fall so far short of those expected. Doubtless, many of the undetected cases are slight, but these are just the cases it is important to detect, and the findings support the inquiry committee's view that the practice governing ophthalmic work in schools needs modifying. The difficulty is to decide on a suitable reform. To test every child by refraction would result in expenditure that could not be entertained for the present. The efficiency of routine examination could be improved by such simple procedures as testing acuity with a +1 D. lens —the eyes of all school entrants might be thus tested as soon as they know their letters; children with symptoms which might be due to an uncorrected refractive error should be examined by refraction.

Myopes Dr. Douglas divides into three groups: (1) Those who can see well and have no severe or progressive defect. These are the larger number (nearly 70 per cent.), and they can follow the ordinary curriculum. (2) Those who have a moderate defect in both eyes or a serious defect in one eye only. These are fewer in number (about 20 per cent.); they can do modified school work with reasonable precautions. (3) Those with severe or rapidly progressive defects. Their number is smaller (11 per cent.); some of them cannot read ordinary type. The second, and especially the third group, cause the difficulties, the more so because scientific opinion is divided on the value of the measures adopted. The majority of ophthalmologists in this country believe that the morbid process is accelerated by ordinary school work, and that homework should be prohibited. The opposing school holds that the progress of the disease depends on hereditary and constitutional factors. If this latter view is correct, as it may well be, to prohibit such children from reading is to take a serious responsibility. To deprive an intelligent child of 12 of books at the time when normally he starts to acquire those habits of curiosity and study upon which so much depends later may well be resented by parents. Myopes can rarely excel at games or sport, and to deprive them of their traditional consolation and path to a healthy self esteem may pave the way to a sense of inferiority. Dr. Douglas thinks the best course is to allow such children to attend the ordinary schools for part of the time and to devote the rest to special instruction.

Of the hypermetropes less than 20 per cent. had +3 D. or more; nearly all of these had diminished visual acuity. Those with less than +3 D. were often brought for refraction because of symptoms such as migraine, styes, conjunctivitis, or blepharitis. Why, it may be asked, should children who have the amount of hypermetropia normal for their years suffer from symptoms which can often be rapidly relieved by the wearing of glasses. Dr. Douglas suggests that in many cases hypermetropic astigmatism, too slight to be revealed by the method of classification used, is the real source of trouble.

Industrial Housing

The housing difficulties described by Dr. J. Yule in his report as medical officer of health for West Bromwich are typical of those met with in many industrial towns. Since the last census the population of the county borough has increased by 10,000, and the 82,000 residents are now accommodated in 18,500 houses, mostly of the working-class type. During the intercensal period the average number of persons per inhabited house has gone down from 4·9 in 1921 to 4·4 in 1931. The most serious difficulty is to meet the demand for additional houses at a rental suitable in the present state of financial stringency. Another difficulty is experienced in obtaining building sites within reasonable reach of the centre of the town, with inexpensive transport to the works. Much of the land in the borough is unsuitable for building purposes owing to mining operations. The activities of the corporation are indicated by the erection of 2816 houses since 1920; of these, 1816 are of the non-parlour three-bedroom type, 105 of the non-parlour two-bedroom type, and 834 and 61 of the parlour type with three and four bedrooms respectively. During 1931 the corporation erected 518 houses, the largest number in any year since the war, whilst only five State-aided houses were erected by other enterprise. As regards older houses, 8000 have two, three, or four rooms, including 1350 of the back-to-back type, and the majority of these are from 50 to 100 years or more old. A moderate estimate gives 1250 unfit houses. There are 7000 without adequate internal water-supply, and 6000 with no w.c. accommodation within their own curtilage. One unhealthy area has been dealt with and some progress has been made with three others during 1931. Miss A. J. Philipp, the housing manager, gives, as signs of the easing of the housing situation, the facts that applicants now frequently find other accommodation, while municipal tenants quit and obtain houses under private ownership, and many tenants are purchasing houses. On the other hand, the applicants now left on the register are the most difficult to help—namely, those who can pay a very low rent for accommodation near their work, and casual labourers, who cannot afford a whole house. A simpler type of house is needed and there is a long waiting-list for the houses on Friar Park Estate, let at an inclusive rent of 7*s.* 9*d.* to 8*s.* 9*d.* Miss Philipp pleads for shopping facilities and buildings for social functions on the outlying estates, and records that the first annual garden competition was a great success. She also reports that the tenants removed from the slums improve in the standard of cleanliness and behaviour beyond expectation, but that perhaps 10 per cent. have not the ability to raise themselves above their slum habits. The housing committee have therefore erected four experimental bungalows within easy distance of the town let at an inclusive rental of 6*s.* 6*d.* weekly, and it is hoped to erect others which can be let at an even lower rent.

Another experiment has been the transformation of a large de-licensed public-house into two flats in which two families of 15 members each are accommodated. Many tenants who could normally pay the rents of cheaper houses are handicapped by the need for paying weekly instalments on hire-purchased furniture, and to meet this the housing committee has an exhibit of amateur furniture, made entirely from packing-cases, borrowed from the Birmingham Copec House Improvement Society. By this method, it seems, a room can be entirely and satisfactorily furnished for 25*s.* The difficulties of the situation are aggravated by the increase of unemployment; the number of unemployed men in 1931 being 4480 as compared with 2956 in 1930.

MENTAL HOSPITAL REPORTS

At THE RETREAT, YORK, there were 189 patients at the end of last year; of the 103 admitted during 1931, 60 per cent. were voluntary and 9 "temporary." The death-rate was 11·6 per cent.; 33 patients were discharged recovered and 44 relieved. Dr. Neil Macleod, the medical superintendent, remarks that the admission-rate and type of illness seen show no reflection of the national crisis, and that the association of alcoholism with mental illness has been steadily decreasing in recent years. Special use is made in this hospital of glandular extracts, massage, ultra-violet rays, and organised occupation. The occupational therapy department, indeed, has grown so much that the instructor has been supplied with an assistant. There is a central pavilion, but a great deal of work is done in the wards as well. All the patients who were well enough went to a holiday house in the summer. Of the 106 male and female nurses, 53 are registered or certificated. The report makes cordial reference to the Final Report of THE LANCET Commission on Nursing, when discussing the problem of procuring suitable probationers. Dr. Macleod points out that there should not be any gulf between general hospital nurses and mental hospital nurses. The State register has a common entrance for all, and it is desirable, if not always practicable, that the mental nurse should have had a general hospital training. At The Retreat all the responsible nursing positions are held by doubly qualified women. The training school at The Retreat has a famous tradition, for the late Dr. Bedford Pierce was a pioneer in promoting the development of mental nursing, and Dr. Macleod shows that he is no less interested in the training of mental nurses.

The HERTFORDSHIRE COUNTY MENTAL HOSPITAL at HILL END, ST. ALBANS, had 972 patients in residence at the end of last year. The recovery-rate for the year was 36·8 per cent. and the death-rate 6·2 per cent. Various temporary expedients have been adopted to meet the demands for extra beds, and a number of mental defectives have been transferred to a colony; but the problem of overcrowding will arise again before long. There were eight cases of tuberculosis, two of dysentery, and one of chickenpox. Malarial treatment was used for three cases of general paralysis. A number of patients were seen at the dental, gynæcological, and ear, nose, and throat clinics, and radiological examination, where necessary, was obtained in the town. A large number of patients had their interest aroused by occupational therapy and physical drill classes. The work of the pathological laboratory is increasing, and examinations are made for other institutions in the county. During the year, 26 voluntary and 8 temporary patients were admitted. An out-patient clinic has been established at the St. Albans and Mid-Herts Hospital. Parole beyond the estate was granted to 21 men and 82 women, and 48 men are free within the grounds. The search for nasal sepsis as a cause of mental disorder has proved disappointing, but tonsillectomy has been useful. During the year nine nurses and two attendants obtained R.M.P.A. certificates.

At the LEICESTER AND RUTLAND MENTAL HOSPITAL there were 783 patients at the end of last year. The recovery-rate for the year was 35·3 per cent., and the death-rate 9·5 per cent.; the causes of death were verified by post-mortem examination in 87·6 per cent. of cases. Apart from three cases of Flexner Y dysentery, the general health was good. During the year 21 voluntary patients and 1 temporary case were admitted; the average duration of stay of the voluntary patients was two and a half months. Overcrowding has now reached alarming proportions, but 40 quiet cases are to be transferred to public assistance institutions. The laboratory has made over 1000 examinations. During the year three attendants and six nurses obtained R.M.P.A. certificates.

The DOWN COUNTY MENTAL HOSPITAL at DOWNPATRICK publishes a report illustrated with photographs of its operating theatre and the X ray, hydrotherapy, and occupational therapy departments. There were 826 patients on the books of the institution at the end of 1931. The recovery-rate for the year was 32·6 and the death-rate 7·3 per cent. The hospital is on the verge of overcrowding, but the new male occupational therapy department made possible a rearrangement whereby 15 new beds were provided. A number of patients have been granted parole. The most notable event in the history of the year was the completion of the hydro-electric department; two consulting radiologists and a radiographer have been appointed. There were nine cases of zymotic disease, of which the source could not be traced. Some 60 per cent. of the patients are usefully employed. Four nurses passed the R.M.P.A. examination, bringing the total number certificated up to 70.

At BARNWOOD HOUSE, GLOUCESTER, there were 223 patients at the end of last year: 1 temporary and 20 voluntary. For the first time in the records of the hospital the numbers of certified and voluntary patients admitted were practically equal. The recovery-rate was 50 per cent. of the admissions and the death-rate was 9·87 per cent. The general health was good, but many of the cases admitted were elderly and debilitated. One patient suffering from general paralysis was treated with malaria and was discharged recovered. Several patients suffering from dementia præcox were also treated, but without improvement. All new patients have a routine examination by the pathologist. The value of occupational therapy has again been demonstrated, and the medical superintendent shows that different types of mental disorder require different kinds of occupation. The summer house at Weston-super-Mare was again much appreciated. An X ray apparatus has been purchased and a dark room fitted up; nearly all new patients have their teeth X rayed. Dental films are sent to a dentist and other films to a radiologist for interpretation. During the year 12 nurses passed the final examination of the R.M.P.A.

bringing the total certificated to 85 per cent. of the men and 45 per cent. of the women.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 10TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 9 (last week 10); scarlet fever, 1389; diphtheria, 796; enteric fever, 79; acute pneumonia (primary or influenzal), 398; puerperal fever, 44; puerperal pyrexia, 89; cerebro-spinal fever, 28; acute poliomyelitis, 33; acute polio-encephalitis, 8; encephalitis lethargica, 16; relapsing fever, 1 (Uxbridge); dysentery, 40; ophthalmia neonatorum, 83. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 13th–14th was as follows: Small-pox, 19 under treatment, 2 under observation (last week 20); scarlet fever, 1113; diphtheria, 1286; enteric fever, 14; measles, 344; whooping-cough, 391; puerperal fever, 25 (plus 10 babies); encephalitis lethargica, 232; poliomyelitis, 4; "other diseases," 109. At St. Margaret's Hospital there were 12 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 12 (0) from measles, 5 (3) from scarlet fever, 20 (2) from whooping-cough, 22 (6) from diphtheria, 89 (29) from *diarrhœa and enteritis under two years,* and 9 (3) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa were 14 more than in the previous week, the highest figures being Liverpool 16, Leeds 6, West Ham 4, Southampton 3. The fatal cases of enteric fever outside London occurred at Luton and Grimsby. Three of the deaths from measles were reported from Wigan. Diphtheria accounted for 4 deaths at Hull, 3 at Liverpool. The number of stillbirths notified during the week was 253 (corresponding to a rate of 40 per 1000 total births), including 38 in London.

PANEL AND CONTRACT PRACTICE

Questions of Mileage

THE North Riding insurance committee has decided to send a deputation to the Ministry of Health to ask for a special mileage grant to doctors in practice in that area. Rural practitioners are allowed £250,000 to pay for mileage, and it is the duty of the distribution committee to advise the Minister how this sum should be divided up. At present the grant does not apply to attendance on insured persons who live within two miles of the doctor of their choice; one unit of mileage is allowed for a patient living under three miles but over two miles away, two units for one living under four miles but over three, and so on. Quite recently all rural practitioners were requested to revise their mileage lists in order that each insurance committee might report to the Ministry, and so to the distribution committee, their claim for so many units. The £250,000 is divided up amongst these total units, each committee being allocated a sum to cover the mileage claim of each practitioner. The matter does not however rest there, for in addition to the claim for ordinary mileage (which suburban practitioners do not obtain), rural practitioners can claim a special mileage allowance if they have patients who live in places difficult of access—say, the Lake district or the Highlands. A sum of £10,000 can be drawn on for this purpose and, presumably, North Riding doctors could put in a similar claim. It has always been doubtful whether the rural practitioner was adequately recompensed for his extra costs, both in time and in wear and tear on car, for attendance on an insured person living (say) four miles away, if at the end of that journey he had to walk through places impossible for a car to pass in winter; and extra payment could probably be claimed for such a case. But the suggestion that an insurance committee might pay less mileage rates to some doctors in order to pay more to others is contrary to present regulations, and could not be realised without an alteration of the regulations after negotiation with the Insurance Acts Committee. If the deputation to Whitehall can do anything to settle the rural practitioner's grievance the journey will not have been made in vain.

Compensation Law

The fact that a patient has had an accident at work—for which, presumably, he will obtain compensation—does not do away with the obligation of an insurance practitioner to give him weekly, if he asks for it, the certificate of incapacity. The practice of approved societies in the matter varies. Some insist on the weekly certificate and others do not ask for more than a final certificate after they have received notification of the accident. The use of these weekly certificates is to excuse contributions under the Act, so that the member does not get into arrears through incapacity, the result of accident. The *National Insurance Gazette* of Sept. 10th discusses the case of an injury at work resulting in the loss of an eye, in which the employers called an eye specialist, who said that after about six weeks' work a man with one blind eye might be just as competent a mechanic as a man with two sound eyes. The judge is reported to have remarked that if all the eye surgeons in the world said that a one-eyed man was as good as a man with two eyes he would not have believed it. The workman must prove total or partial incapacity to sustain a claim for payment or continuance of payment of compensation, and in this case the question of disfigurement arises. If through disfigurement the patient is unable to obtain work he is entitled to compensation, but if disfigurement does not give rise to incapacity or cause difficulty in securing employment there is no provision in the Act for payment of compensation—a difference from the common law, where damages may be claimed for disfigurement resulting from an accident due to negligence in addition to loss of wages. Again, a workman is not entitled to compensation solely for the loss of an eye, irrespective of whether he can follow his old employment or not. He has to prove incapacity, either total or partial, and the requirements of the law are illustrated by the following words of the county court judge:—

> "In my view it is inadvisable that the applicant should resume work as a guillotine cutter or attend to machinery for the present, but I find that by the beginning of November, 1930, at the latest, he was fit to do work as a labourer or roundsman or storekeeper, or in fact any work not calling for strict accuracy of vision, and that as from that date he was capable of earning a weekly wage at least as high as that earned by him in the employment of the respondents. His failure to find such work was not due to the fact that he had become a one-eyed man."

The custom of many insurance companies is to try, after a certain period has elapsed, to settle a claim for some lump sum. This has given rise to the opinion amongst workmen that companies must compensate for the definite loss of an eye, regardless of incapacity or capacity to work. The above statement quite clearly shows this not to be the case.

CORRESPONDENCE

THE INCREASE IN ARSENIC-RESISTANT SYPHILIS

To the Editor of THE LANCET

SIR,—Dr. Browdy has not quite understood me. In the treatment of early syphilis, the first essential is to have a satisfactory and attainable standard of cure. The aim of therapy is to reach that standard in the shortest possible time, with the smallest amount of therapy, and without causing any damage to the patient. Furthermore, this standard must, from the treatment given, be attained by *every* patient. For example, the course of treatment laid down for a case of early syphilis must be such that if it is completed according to schedule, that patient will undoubtedly pass the tests of cure adopted. That is what is meant by a 100 per cent. cure-rate.

While it is impossible to tell with absolute certainty, in the living, if or when every *Treponema pallidum* has been destroyed, nevertheless experience has shown that if certain tests are fulfilled, cure of the disease may be assumed. In my view the minimum standard of cure consists of :—

(1) Negative Wassermann and two other supplementary tests—such as the Kahn and Meinicke—on the blood after provocation, carried out every 12 weeks for at least two years after the cessation of treatment.
(2) Negative cerebro-spinal fluid tests during these two years.
(3) Absence of clinical and radiological signs.

Patients who have passed these tests, and even others which are less severe, have not relapsed in after-years; some have got married with safety to their partners and to their progeny; and a few have even acquired an undoubted second infection. It may, then, be taken that such tests are sufficiently stringent; and that when they are fulfilled, they indicate that such patients have been cured by the treatment administered.

Assuming for the moment that these criteria are accepted—in other words, that unless patients are subjected to these tests and pass them they cannot be considered cured—then the lower limit of adequate treatment consists of the minimal amount, intensity, and duration of therapy with which they can be attained. The damage wrought by syphilis depends upon three main factors: (1) the virulence of the parasite; (2) the resistance of the host to the disease; and (3) his power of reacting to the remedial agents given. It is therefore very clear that there must be a wide margin between the degree of therapy which will cure the mildest infection in the most favourably reacting patient, and that which will be efficacious in a virulent case, where the patient responds in a slow and unsatisfactory manner. And it is important to note that it is impossible to say when the patient is seen if the disease is a mild or a severe infection, and whether or not the response to treatment will be sufficient. Since, upon the criteria of cure adopted, it is possible to attain a cure-rate of 100 per cent., it naturally follows in order to reach this, that mildly infected persons, those who are endowed with a high degree of resistance to the disease, and those who respond well to remedial agents, must most certainly be over-treated if they are in receipt of a degree of therapy necessary to cure less fortunate persons. As it is impossible to tell into which category a patient will fall, the fact must be accepted that in order to cure *all* patients, a certain proportion must inevitably receive treatment after all the treponemas have been destroyed. It is therefore essential that therapy be of such a kind that administration in excess of what is absolutely necessary for sterilisation shall not of itself cause any damage to the patient. This is the reason why drugs with high chemotherapeutic indices should be chosen. Such agents can be exhibited in an amount and with an intensity far in excess of what is necessary for sterilisation, without inflicting any bodily damage.

Under-treatment is a very serious matter—probably more so than no treatment at all. To be sure that all patients have adequate treatment—i.e., to reach a cure-rate of 100 per cent.—implies an equal certainty that many must receive more medication than is strictly necessary. This, however, need not be harmful. It is possible that to some patients suffering from sero-negative primary syphilis, even eight weekly intravenous injections of neo-arsphenamine would be over-treatment. A few rare cases may actually be cured by four such injections at intervals of three weeks with or without hyd. c. cret. by mouth. But it is quite impossible to tell what cases will be cured by such trivial therapy; and if they are uncured, the disease is digging itself into their viscera during the time they are being tested. Their last state is thus worse than the first.

To be sure of giving adequate therapy to *every* patient, over-treatment for a certain number is both unavoidable and expedient. Even what has been termed "gross over-treatment" need have no noxious effect. The term "over-treatment" is not a good one, since the suggestion contained therein is that remedial applications beyond the stage of sterilisation—which stage is not identifiable at once—is harmful. It is perhaps immediately uneconomical, but it need not be deleterious. If therapy is pushed so that the patient suffers, that is not over-treatment but *bad* treatment. The fear of giving more of a drug than is necessary, of continuing with it beyond the time when cure has been effected, is a bogy. It would be a harmless one were it not for the fact that its presence causes the pendulum to swing too far in the other direction and so result in under-treatment. That is a matter for grave concern.

The point I am anxious to make is that by a careful analysis of case-records, every syphilologist should be able to say what is the minimum course of therapy which he finds attains a cure-rate of 100 per cent. in early syphilis. If his course does not attain that result, then it is inadequate. I will give one instance out of my experience :—

In sero-negative primary syphilis by giving neoarsphenamine (9·25 g.) and bismuth (3·2 g. of the element in the form of a suspension of the metal in isotonic glucose) during a period of 24 weeks according to the alternating principle which I adopt, every case without exception over an observation period of never less than two years, has suffered no clinical or serological relapse. For late primary, early secondary, and late secondary cases, slightly longer courses are used, but the results are identical—a cure-rate of 100 per cent. Since the beginning of 1931 the courses have been increased in duration by two or three weeks each, so as to give higher efficiency indices and to allow a little more latitude for irregular attendance.

There is nothing out of the ordinary in these results. A great many other workers get equivalent results from other methods. The point is that all such courses have one thing in common which can only be designated "adequacy," but which has been a difficult thing to measure. It is impossible to compare different methods occupying different times and using different drugs unless there can be found some "yard-stick" which can be applied to all. By utilising the chemoherapeutic indices of the agents, and from these, llotting to each drug a therapeutic unit value, a ormula has been found which takes into account he variable and vital time-element, and enables one o arrive at an index figure representing the quality r efficiency of the therapy. By this means the fficiency indices of a large number of different courses s used in Great Britain, Europe, and the United States, have been worked out; and this fact emerges: hat wherever a cure-rate of 100 per cent. is obtained, he efficiency index is 70 or over. For example, hat at St. Thomas's Hospital in London is 81; that quoted by Hazen, based upon the methods at the Johns Hopkins and Mayo Clinics, and set out as the "ideal" course, gives an index of 90. I therefore say, without any hesitation, that—to take again the case of sero-negative primary syphilis—the minimum duration of treatment must not be less than 24 weeks, and during that time sufficient therapy must be given so that the efficiency index does not fall below 70. Anything below that is inadequate in so far as 100 per cent. of cures is concerned; adequacy is represented by 70 or over.

Dr. Browdy asks: "Is it not preferable to have a working basis of treatment and to treat individuals as necessity demands?" It is not merely preferable; it is *essential*. Necessity demands that every individual must be treated upon the assumption that the infection is severe, and that he is a person with low resistance and a poor therapeutic response. The therapy applicable to that condition is that which has at least 70 points of efficiency. Such is the only sure working basis of treatment. It is easily put to the test; and if it were in any way found wanting, there would be no undue delay in hearing about it.

I am, Sir, yours faithfully,

E. TYTLER BURKE.

City of Salford Municipal Clinic, Sept. 10th, 1932.

PATHOGENESIS OF CAVITIES IN THE LUNGS

To the Editor of THE LANCET

SIR,—The interesting article by Dr. J. Sowerbutts in your issue of Sept. 17th (p. 623), describing an annular shadow which caused "bulging" of a collapsed lung, has again raised several controversial points concerning the pathogenesis of pulmonary cavities. Dr. Sowerbutts inclines to the theory put forward by W. Mitchell, who looks on these rings as air cysts following perforation of a bronchus and the escape of air into the interstitial tissue of the lung. This theory is satisfactory in so far as it explains the relatively sudden occurrence and disappearance of these definitely intrapulmonary shadows; but is it not a little far-fetched to assume that air passes through the bronchial wall, giving rise to a single bubble or cyst instead of an interstitial emphysema?

It seems more probable that these thin-walled cavities arise in the alveolar tissue in a similar manner to emphysematous bullæ. One of the fundamental facts of pulmonary physiology is the relative difficulty of expiration as compared with inspiration. Not only is the lumen of the bronchus smaller during expiration, but the presence of any partial obstruction such as tenacious secretion or thickened mucous membrane tends to produce a valvular action. During the deep inspiration following a cough air will be sucked through a partially obstructed bronchus and will have difficulty in returning during the expiratory phase. Should the alveolar walls in any region be weakened by disease it is easy to see how an air cyst could arise in the parenchymatous tissue of the lung.

Vere Pearson has observed [1] that when a pneumothorax needle was introduced into a large cavity a positive pressure was found: this recurred after it had been reduced by aspiration of air as soon as the patient took a few deep breaths. Pearson's observation points to the presence of a valvular mechanism even with a large chronic cavity; this might result from partial obstruction of a bronchus, or even from the presence in the cavity of fluid too thick to pass through a bronchus although still allowing bubbles of air to be sucked through it during forced inspiration.

The fact that many cavities, particularly when rapidly formed, are round in outline, also suggests the presence of air under pressure, and I submit that in their pathogenesis the most important factor is some valvular action in the smaller bronchial tubes which, by interfering with the escape of air from the damaged alveoli, causes the lung to pump itself up and thus produce cavities. Removal of the obstruction would explain the occasional rapid disappearance of the annular shadow.

I am, Sir, yours faithfully,

ANDREW MORLAND.

Mundesley Sanatorium, Sept. 18th, 1932.

LONGEVITY OF ANTHRAX SPORES

To the Editor of THE LANCET

SIR,—In the course of my work I have found an interesting fact regarding the length of life of the anthrax bacillus. Having noted that old dried-up cultures of anthrax spores still survived after having been stored in glass jars for just over two years, I kept agar cultures for longer periods, the oldest of which was made in January, 1914. To these old cultures, which resembled a small streak of horn-like substance, some sterile broth was introduced, and they were incubated at 37° C. for two days. All the tubes then exhibited the typical appearance. The growth in the oldest one was subcultured and examined microscopically; it showed a pure culture of *B. anthracis*. Thus the spores had survived after having been stored away for eighteen and a half years.

I am, Sir, yours faithfully,

W. H. LAUNDER,
Bacteriologist to Jeyes Sanitary Compounds Co.

Sept. 17th, 1932.

SAFE MILK

To the Editor of THE LANCET

SIR,—The matter of safe milk is important professionally as well as intrinsically; doctors are continually asked for practical advice. But with such conflicting guide-posts as the following what course can we steer?

(1) A leading article in your issue of Sept. 10th (p. 581) states: "We know that 6·4 per cent. of the mixed milks of this country contain living tubercle bacilli."

(2) Dr. Roodhouse Gloyne recently published investigations in *Tubercle* which showed that 10·2 per cent. of samples of Grade A milk, and 3·8 per cent. of samples of Grade A (T.T.) milk were contaminated with tubercle bacilli.

(3) The Manchester city council found 2·2 per cent. of pasteurised milk samples were positive to tubercle bacilli. (*Medical Officer*, 1932.)

In the light of these statements from responsible sources it would appear: (*a*) there is no absolute safety anywhere; (*b*) ordinary mixed milk comes out better than Grade A; (*c*) the more expensive type—Grade A (T.T.)—appears as rather less safe than pasteurised. We are thus led up to the position taken by the Ministry of Health that both the Grade A (T.T.) ritual, and also pasteurisation, are desirable if *security is really sought.*

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[1] Brit. Med. Jour., 1930, i., 381.

The "drink more milk" campaigners will come off badly if all this is realised. Already the medical officer of health for Lewes, writing in the *Times* (Sept. 15th), is suggesting that the proportion of samples in which tubercle bacilli are found "raises the question whether the provision of Grade A (T.T.) milk to school-children, as adopted by many of our education committees, is altogether free from risk."

I am, Sir, yours faithfully,
ESTHER CARLING.

Berks and Bucks Joint Sanatorium, Sept. 16th, 1932.

ANAPHYLAXIS FROM BEE STINGS

To the Editor of THE LANCET

SIR,—In those stung by bees severe symptoms are not uncommon. They may include faintness, pallor and cyanosis, diarrhœa, urticaria, unconciousness and, exceptionally, death within a few minutes, yet text-*books seem to be completely silent on the* subject. I recently had a case of a labourer, aged 69 years, who died five minutes after being stung by a bee on the back of the neck. A week previously he had been stung on the top of the head without any ill-effects; but four years before he had been unconscious for some hours and unable to work for three weeks following a sting (location unknown). ' Is this idiosyncrasy a form of protein shock; or does it depend, as Dr. Ryle has suggested,[1] upon the entry of the poison into a superficial vein ? I am told that the bee has both acid and alkali poison glands; are they both used, and why, and when ?

I am, Sir, yours faithfully,
NEVILLE M. GOODMAN, M.B.

Lymington, Hants, Sept. 19th, 1932.

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[1] THE LANCET, 1932, i., 642.

MEDICAL NEWS

University of Birmingham: Faculty of Medicine

On Tuesday, Oct. 4th, the distribution of medals and prizes will take place in the medical lecture theatre, and an address to students will be given by Prof. J. T. J. Morrison, F.R.C.S.

Harveian Society of London

The programme of the first half of the session has now been issued. On Nov. 13th Sir Harold Gillies will give a lantern and cinematograph demonstration of plastic surgery at the Hammersmith Hospital, Ducane-road. On Nov. 9th Prof. Grey Turner will give a surgical lecture, under the title Nil Desperandum, at Paddington Town Hall, and at the same place on Dec. 8th Dr. Macdonald Critchley will open a discussion on Migraine.

Institute of Hygiene

A series of lectures will be delivered in the Lecture Hall of the Institute, 28, Portland-place, London, W.1, on Wednesdays, Sept. 28th to Dec. 14th, at 3.30 P.M. Prof. Samson Wright will give the first lecture on Sept. 28th, on Diet and Dietetics, Dr. J. Browning Alexander presiding. Subsequent lectures in October will be: Some Everyday Aspects of Goitre, by Mr. A. E. Mortimer Woolf; the Prevention of Rheumatism in Industry, by Dr. W. S. C. Copeman; Obesity and Slimming—their Cause and Effect, by Dr. Gerald Slot; and the Hygiene of the Ear, Nose, and Throat, by Mr. C. Hamblen Thomas. The lectures are free to men and women interested in health problems.

Public Health Congress, 1932

This congress, of which Sir Hilton Young is the president, will be held at the Royal Agricultural Hall, London, throughout the week commencing Nov. 14th. On Nov. 18th, at a meeting under the auspices of the British Hospitals Association, a discussion on the Report of THE LANCET Commission on Nursing will be opened by the Editor of THE LANCET, Sir Arthur Stanley presiding. The provisional programme includes also the following: a paper on Housing and Slum Clearance, by Dr. C. Killick Millard; a discussion on the Scope, Uses, and Abuses of Infant Welfare Centres; a paper on Smoke Abatement and Public Health, by Dr. H. A. des Voeux, and one on Fumes Emission from Road Vehicles, by Dr. J. S. Owens; papers on Occupational Therapy in Mental Hospitals and Industries in Mental Deficiency Colonies, respectively by Colonel C. F. de Salis and Captain C. W. Mayer, Mr. L. G. Brock presiding; a communication on the Economic Value of Physical Treatment, by Dr. J. B. Mennell; a discussion on the Contribution of Hospitals to Preventive Medicine, to be opened by Mr. C. E. A. Bedwell, Sir Arthur Newsholme presiding; a discussion on the Position of the Poor-law Institution in Relation to National Life, to be opened by Mr. C. A. W. Roberts; and one on the Correct Use of Heat Rays for Producing Comfort in Living Rooms, to be opened by Sir Leonard Hill, Sir Francis Goodenough presiding.

SIR STCLAIR THOMSON has been granted His Majesty's Royal licence and authority to wear the Cross of Commander of the Legion of Honour, which has been conferred upon him by the President of the French Republic, in recognition of valuable services rendered by him.

DR. V. S. HODSON has been elected master of the Mercers' Company.

Manor House Industrial Hospital

This hospital has purchased Ivy House, North End-road, Golders Green, formerly the residence of the late Madame Pavlova, for use as a women's department.

Instruction in Hospital Administration

Two 3-months' courses of lectures and demonstrations on clinical practice and hospital administration will be given on Mondays and Wednesdays at 9.30 A.M. and alternate Saturdays, beginning on Monday, Oct. 3rd, respectively at the North-Western Hospital, Lawn-road, Hampstead, N.W.3, by Dr. A. Joe, and at the Brook Hospital, Shooter's Hill, Woolwich, S.E.18, by Dr. J. B. Byles. The courses are available for candidates for the diplomas in public health. Further particulars may be obtained from the Medical Officer of Health, London County Council, Public Health Department (Special Hospitals), the County Hall, S.E.1.

National Council for Mental Hygiene

A series of lecture-discussions on Mental Hygiene in Everyday Life will be delivered at the house of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Wednesdays, at 5.30 P.M., during October and November. The programme is as follows:—Oct. 12th: The Inferiority Complex, by Dr. Henry Yellowlees; 19th: Guilt, by Dr. Mary R. Barkas; 26th: Rationalisation, by Dr. William Brown; Nov. 9th: Conflict and Character, by Dr. E. Graham Howe; 16th: Day Dreams, by Dr. Isabel G. H. Wilson; 30th: Envy, Hatred, and Malice, by Dr. R. G. Gordon.

Under the joint auspices of the Council and the British Social Hygiene Council a series of four lectures, illustrated by films, on Sex Education and the Child will be held at the May Fair Hotel, Berkeley-street, W. 1, on consecutive Tuesdays at 11.15 A.M., beginning on Tuesday, Oct. 11th. The lecturers will be Mr. D. Ward Cutler, Miss Muriel Bond, M.Sc., Dr. Elizabeth Sloan Chesser, and Dr. William Brown.

Royal Institute of Public Health

The Harben lectures will be delivered in the lecture hall of the Institute at 23, Queen-square, London, W.C. 1, by Dr. Max Neisser, professor of bacteriology and hygiene at the University of Frankfurt, on Some New Investigations Regarding Old Bacteriological Problems, on Oct. 10th, 11th, and 12th, at 4 P.M. The first lecture will be on Constancy, Variation, and Transformation of Bacteria, the second on Tubercle-like Acid-fast Bacilli, and the third on the Bactericidal Effects of Silver. A course of eight lectures on Preventive Medicine: The Maintenance of Health and the Avoidance of Disease, will be delivered at the same place at 4 P.M. on Wednesdays, starting on Oct. 19th, when Sir Ernest Graham-Little will speak on Preventive Medicine and the Education of Public Opinion, Sir Basil Blackett presiding. A course of six lecture-discussions on Mental Defectiveness as a Medico-Sociological Problem will be held at the Institute at 4 P.M. on Thursdays, beginning on Oct. 27th. The first subject will be Mental Defectiveness; Medical and Social Considerations, which will be considered by Prof. R. J. A. Berry, with Mr. C. J. Bond in the chair.

All these lectures and discussions are free.

OBITUARY

SIR CHARTERS SYMONDS, K.B.E., M.D.Lond., F.R.C.S.Eng., LL.D.

Sir Charters Symonds, consulting surgeon to Guy's Hospital, died at Mount Park, Harrow, on Sept. 14th, aged 80 years. His death removes a notable surgeon and teacher, whose life and example have left their mark on his time.

Charters James Symonds was born at Dalhousie, New Brunswick, in 1852. He came to London when he was 17 years old, and after passing the matriculation of London University entered Guy's Hospital, taking his M.R.C.S. in 1875. He won the Treasurer's gold medal in clinical surgery, and held consecutively the appointments of obstetric resident, house surgeon, and house physician. From 1876–79 he was a demonstrator of anatomy, and in the latter year he was appointed surgical registrar, having in the meantime obtained the M.B., B.S. Lond., with gold medals in surgery, obstetrics, and forensic medicine, and first-class honours in medicine, and the M.D. a year later. In 1880 he obtained the M.S. Lond. and in 1881 the F.R.C.S. Eng. While acting as registrar he utilised the opportunities of acquiring a wide and accurate knowledge of surgical pathology. He was appointed assistant surgeon to Guy's in 1882, and was placed in charge of the throat department, an appointment which he held for 20 years, until he was made full surgeon in March, 1902. From 1882–88 he was on the staff of the Evelina Hospital. In 1912, on retiring at the age limit from the active staff of Guy's, he was appointed consulting surgeon to the hospital. He held office in many medical societies, and was at different times president of the Hunterian Society, the Laryngological Society, the Medical Society of London, and the clinical and proctological sections of the Royal Society of Medicine. He was Lettsomian Lecturer in 1910, Bradshaw Lecturer in 1916, and Hunterian Orator in 1921. He was a member of the council of the Royal College of Surgeons from 1907–23, and vice-president in 1916. For some years before the war Symonds was a member of the Territorial Force, and in August, 1914, he was called up for military service; in 1915 he went as consulting surgeon to Malta, and in 1916 to Salonika, where he remained until he returned to England to serve in a similar capacity at Netley and in the Southern Command. In 1919 he was made K.B.E., having previously been given the C.B. and mentioned in despatches. In 1929 he received the hon. LL.D. of New Brunswick University.

SIR CHARTERS SYMONDS

[Photograph by Vandyk

Symonds started his surgical career at a time when the introduction of Listerian methods had just presented surgeons with great opportunities, and no one was better fitted than he for the pioneer work that had to be done. His sound knowledge of pathology, his power of accurate clinical observation, and his habit of scientific note-taking enabled him to see where progress could safely be made, and to avoid the mistakes that can so easily occur when enthusiasm outruns judgment. He had great courage, and would undertake any operation which his judgment led him to believe was in the best interests of the patient, but he never allowed his courage to lead him into recklessness. He was the first surgeon to do an "interval operation" for appendicitis; the patient, who was under the care of Dr. Mahomed, had had two acute attacks of appendicitis, and Symonds removed the appendix after the second attack had subsided. As a teacher of clinical surgery, he was unsurpassed, for he combined with great technical skill and sound clinical judgment the ability to state clearly the reasons upon which his decisions were based, and he kindled in his students an enthusiasm which he knew how to keep alive. One of them writes: "It was not only his own dressers and house surgeons that benefited by his teaching. His 'Monday round' at Guy's was for many years a famous institution, and attended by a large crowd, many of them post-graduates working for higher examinations. To all with whom he came in contact he showed a kindness and a courtesy that made him beloved by patients, students, and colleagues. He could always understand the difficulties of a beginner, and hundreds of his pupils remember with gratitude his patience and his encouragement."

After the close of the war Symonds continued to devote himself to the cause of humanity, and was president of the Invalid Children's Aid Association and treasurer of the Royal Medical Benevolent Fund. This fund lay very near his heart. He had long been a liberal subscriber before he joined the committee of management in 1908. After the death of Samuel West he was appointed hon. treasurer in 1917, and during an interregnum in 1927 he performed the duties of secretary for three months. He visited the office daily, and often spent many hours in making himself acquainted with the circumstances of individual applicants. In 1912 Symonds started paying fortnightly visits to Lambeth Hospital, where he continued to use his great gifts as a clinical teacher. These visits were interrupted by the war, but in 1920 they were resumed and continued regularly till within a few months of his death, long after he was aware of the mortal disease from which he was suffering. To the end he retained his wonderful memory of detail, and took the greatest interest in every advance that was made in surgery. It was characteristic of him that he bore his last illness with patience, and watched the progress of his disease with detachment.

In 1889 Sir Charters Symonds married Fanny Marie, daughter of Lieutenant-General David Shaw, of the Madras Army; she died in August, 1930. He leaves two sons, of whom the elder is physician in charge of the department for nervous diseases at Guy's Hospital.

T. H. C. STEVENSON, C.B.E., M.D. Lond., D.P.H.

Thomas Henry Craig Stevenson was born at Strabane, Co. Tyrone, in 1870, and educated at University College, London. He graduated as M.B. Lond. in 1896, later going on to the M.D. in State medicine and the D.P.H. Camb. He married, in 1900, Ella Louise, daughter of Mr. Samuel Sillifant, and left one son and one daughter. He served from 1905 to 1908 as assistant educational medical officer to the London County Council, and then for a short period as school medical officer in Somerset. In 1909 he was appointed superintendent of statistics in the General Register Office; and in that capacity, or under the substituted title of medical statistical officer which was introduced upon the augmentation of the professional staff of the department to cope with the expansion of its statistical functions, he served until his retirement in 1931 as a result of a breakdown in health. During the war he was a member of the reserved occupation and enemy personnel committees; and for these and other war services performed in the General Register Office he was created C.B.E. in 1918. He was a Fellow of University College, London; Fellow, Guy (gold) medallist, and formerly hon. secretary of the Royal Statistical Society, honorary member of the American Statistical Society, and Jenner medallist of the Royal Society of Medicine. Quite recently he was awarded the Bisset Hawkins gold medal by the Royal College of Physicians.

DR. STEVENSON

[Photograph by Elliott & Fry

But this bare chronicle of services and distinctions affords no indication of the real value of the work which Stevenson performed during his official career at the General Register Office. This must be measured, not only by the individual value of his many brilliant pieces of research, but by the less visible merit of his steady contribution to the maintenance and enhancement of those high standards of scientific sincerity and thoroughness stamped by Farr upon the work of the department. These services and the pre-eminent position which British vital statistics owe to them have already been described in terms which cannot be bettered. The occasion of Stevenson's retirement, hardly more than a year ago, was signalised by a letter of appreciation of his public work signed by six leaders of medical and statistical science. An independently framed appraisal of Stevenson's work could only echo less adequately and authoritatively the following extract:

"Of Dr. Stevenson's contributions to the scientific journals we shall say nothing, except that these would have sufficed to secure a permanent place for him in the history of statistical science. The searching and illuminating discussions of the problems of vital statistics which he has contributed to the Census reports and to the annual and decennial reports of the Registrar-General have formed noteworthy landmarks in the study of our national records. Dr. Stevenson's remarkable analysis of the data of the census of fertility taken in 1911 was a *tour de force*, while the essays contributed by him to the annual reports of the Registrar-General make a wider appeal and, in our judgment, place Stevenson second only to William Farr among those public servants who have secured for England her proud position in the realm of official vital statistics His studies of the factors of infant mortality, of the local distribution and evolution in time of mortality from tuberculosis and of the interpretation of the statistics of cancer mortality, especially in relation to its local incidence in the human body, are further examples of immensely important medical research. Dr. Stevenson first demonstrated, upon adequate data, the contrasting rates of mortality of single and married women from cancer of the breast and reproductive organs; this and his more recent studies of the variation of cancer mortality with social status constitute probably the most important statistical contributions yet made to our knowledge of malignant disease'

It is a melancholy reflection that this testimony, vouchsafed to the living man in grateful acknowledgment of a life work not then concluded, should so soon be invoked to serve as his funeral oration.

Mr. S. P. Vivian, Registrar-General, writes: "Stevenson possessed to a marked extent that curiosity which he himself insisted upon, when discussing after his retirement the qualities which he would like to see in his successor, as the most important element in the make-up of a successful researcher. He would 'browse' (the term acquired almost official currency as describing a recognised province of his official functions) upon the raw returns of the year's figures, observing, perhaps, some previously unnoticed movement which aroused his interest. Supplementary tabulations would be obtained, testing whether significance could be attached to the phenomenon; and if the result was positive, the hunt was up. In this way his holding office in a factory of statistics stood his research work in good stead; he had the earliest results under observation and could shape their tabular presentation with a view to their elucidating the special problems which engaged his attention at the time. It followed from his methods that, as he often confessed, he had not the slightest idea, before beginning to examine the year's figures, what subject he would select for special study in those sections of commentary for which he was responsible in the department's annual statistical review. He found it impossible, moreover, having noted a promising subject for examination, to put it into cold storage for resumption later; if the scent was hot, he had no choice but to follow it. The curiously easy style of his written work, making smooth the rough place of a complicated statistical exposition, was in marked contrast to his slow and halting habit of speech and apparent unreadiness in debate."

Some time may pass before Stevenson's work will be seen in its true perspective and with a full appreciation of its value to science and to the public welfare; his stature, like Farr's, cannot fail to increase with the lapse of years.

SIR HENRY SIMSON, K.C.V.O., F.R.C.S. Edin., F.R.C.P. Lond., F.C.O.G.

THE sudden and tragic death of Sir Henry Simson has come as a shock to most of his friends and patients, though those with whom he was intimately associated had been concerned about his health for ome time; although he was obviously not well he carried on uncomplainingly, and continued in full and active work until the end.

Henry John Forbes Simson was born in 1872 n India, being the son of Robert Simson, of the Bengal Civil Service, and Amy Inglis. He was educated at Edinburgh, passing from the Collegiate School to the University, where he graduated M.B., C.M., in 1895. He held resident posts at the Royal Infirmary, the Royal Hospital for Sick Children, the Royal Maternity Hospital, and the City Fever Hospital, and then travelled abroad for a year, spending much of the time in Egypt, before settling in London in 1900. The year before he had become F.R.C.S. Edin., and in 1901 he took the M.R.C.P. Lond., being elected F.R.C.P. in 1926. Simson's bent for obstetrics and gynæcology dated from his early days in Edinburgh, and was stimulated by the influence of Sir Halliday Croom, with whom he was at that time closely associated. In London he soon made a place for himself among those who practised his specialty, and for over 30 years had devoted himself to its development. His chief hospital posts were those of surgeon to the Hospital for Women, Soho-square—from the active staff of which he resigned three years ago, when he was appointed consulting surgeon—and of obstetric surgeon to the West London Hospital, which hospital he served also as dean of the post-graduate college. His aim was to provide adequate lectures, demonstrations, and practical classes for practitioners who sought revision courses in London, and he worked hard to this end. In connexion with both hospital and college matters Simson's opinion and advice were eagerly sought and generally acted upon, for his wisdom and good judgment were manifest in committee work. During the war Simson was consulting obstetrician to the Maternity Hospital for Officers' Wives, at 12, Princes-gate. He acted as examiner in obstetrics and gynæcology to the Conjoint Board and to the University of Leeds, and was one of the first Fellows elected to the College of Obstetricians and Gynæcologists, in the foundation of which he had played an active part. His professional association with the births of the children of the Princess Royal and of the Duchess of York gives him a claim on the gratitude of the nation; he was created K.C.V.O. in 1925. He married in 1908 the famous actress, Lena Margaret Ashwell.

SIR HENRY SIMSON

[Photograph by Bassano, Ltd

Simson was a clear and accurate thinker and was such a good listener that it was always a pleasure to talk to him. His activities were many; he was a man of great industry and yet did everything without fuss. His outstanding personal qualities were kindliness and sense of humour; he endeared himself to all who knew him. Simson made many friends and never lost any, perhaps because he never said anything to any man's detriment; it was foreign to his nature to think evil of anyone. When at school in Edinburgh he was distinguished as a three-quarter; he retained his interest in Rugby football and was often to be seen at Twickenham. He was a keen golfer, hitting a clean, long, straight ball with a 'follow through'; it has been said of him that his golf was typical of his conduct through life."

One who was associated with Sir Henry Simson for many years in hospital, and assisted him in his private work for over ten years, writes: "His charm of manner combined with great skill in obstetrics perhaps explains the extraordinary success of one who did not come to London until he was 28. What impressed me most in Simson as a colleague was his equable temperament. I saw him under every possible condition—he was as calm and collected under the most trying circumstances as when things were easy and straightforward. He never betrayed his feelings, although he was greatly troubled when a confinement or operation was not going well. His energy was amazing—only a man of magnificient physique could have worked as he did. After being up all night he would return home, take a hot bath, have breakfast, and start off again on a full day's work. His devotion to his work undoubtedly shortened his life. He was obliged to give up his ward at the Soho Hospital after a severe illness three years ago, but at the West London Hospital he never missed his ward visit or operating day if he could possibly help it. Simson's generosity was wonderful; he was always ready to help colleagues, friends, or patients, and he gave freely his professional services or his wise advice whenever these were called for."

IAN MACDONALD, M.D. Edin. and Paris

Dr. Ian Macdonald, whose death in London on Sept. 14th was briefly recorded last week, was born in Ballachulish, Argyllshire, where his father, a Free Church minister, died young, leaving a widow and two sons. There were no luxuries in his boyhood. Educated at the Royal High School, Edinburgh, he worked hard and played hard, becoming captain of the first XI. and XV. After graduating in medicine at Edinburgh in 1895 he went to the British Hertford Hospital in Paris as a resident medical officer learning there the principles of aseptic surgery and abdominal technique. As resident at the West Ham Hospital he saw many cases of burns, and wrote his thesis on picric acid treatment for the M.D. Edin. His next post was assistant medical officer at the Rio

DR. IAN MACDONALD

Tinto Mines, where malaria was then endemic. Laveran had found "bodies" in the red blood corpuscles, and the mosquito had been suggested as a "carrier." Macdonald had worked under Laveran, and, two months before Ross's great discovery, he had sent mosquitoes, fed on malarial blood, from Rio Tinto to Paris—but they died en route. On leaving Rio he joined his uncle, the late W. A. Mackay, at the British Clinic, Huelva, Spain, where he developed abdominal surgery to such effect that one of the main streets in that town is now named "Calle Macdonald." His contributions to surgical literature are to be found in the medical journals of England, Spain, and France; one of these recorded the results of 205 cases of gastro-enterostomy, another dealt with the prevalence of chronic gastric disease in Spain.

Of the man himself, Dr. Halliday Sutherland, his cousin, writes: "Seriousness was the main trait of his character. Everything he did, in work or recreation, he tried to do well. He was a first-rate angler and a fair shot. In tennis, golf, and cricket he studied the technique of the game. During holidays he watched the technique of other surgeons in France, England, and America. As he once remarked, 'They don't put everything in their books and articles.' He was modest, and with strangers had a grave and formal manner, but with intimate friends he showed a keen appreciation of humour. Over his cases he took great care in diagnosis and treatment; he was neither a bold nor a cautious surgeon, but operated with assurance, skill, and an eye which never overlooked the smallest detail in technique. His average time for a posterior gastro-enterostomy was 20 minutes, but he never hurried. He never wrote about a case until he had first read the literature. In conversation he was a good listener, but his critical faculty was always alert, and he had a keen appreciation of French, Spanish, and English prose. His stability and strength of character was best known to his relatives, who in times of sickness relied implicitly on his judgment."

In 1916 Dr. Macdonald married Elizabeth, second daughter of the late Peter Henderson, of Huntly, Aberdeenshire, who survives him.

THE SERVICES

ROYAL ARMY MEDICAL CORPS

Maj. D. T. Richardson, Asst. Prof. R.A. Med. Col., relinquishes his appt.

Maj. J. H. M. Frobisher retires on retd. pay.

Lts. (on prob.) R. Johnston and G. A. Kane are restored to the establishment.

Lt. E. Hicks resigns his commn.

INDIAN MEDICAL SERVICE

Lt. (on prob.) K. Jilani to be Capt. (prov.) (on prob.).

Col. L. P. Brassey retires, on account of ill-health.

ROYAL AIR FORCE

The undermentioned have been granted short service commissions as Flying Officers for three years on the active list: R. K. Muir, G. A. M. Knight, J. F. Ziegler, and F. H. Peterson.

DEATHS IN THE SERVICES

Lieut.-Colonel SANDFORD MOORE, who died on August 27th at Shankill, Co. Dublin, in his ninetieth year, was born at Forbes, Co. Longford, in 1843. In 1866 he graduated M.B. at Trinity College, Dublin, and as resident at Sir Patrick Dun's Hospital successfully nursed his colleague, S. M. Salaman, through an attack of typhus. This was the year in which cholera broke out in Dublin, and both residents offered to resign military commissions to remain on duty in the hospital. In the Franco-Prussian war of 1870–71 Moore served with the English Ambulance, receiving for his services both the Prussian war medal and the French bronze cross. He took part in the Ashanti war of 1873–74, and was present at Essaman. His experience in France led him to take an energetic interest in the treatment of the sick and wounded in war; he served on the central executive committee of the St. John Ambulance Association, and from 1882–86 was assistant professor of hygiene at Netley under F. S. De Chaumont. He also studied law and was called to the Bar. In 1887, being threatened with blindness, he retired with the rank of brigade-surgeon, being gazetted lieut.-colonel ten years later.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

CHARING CROSS HOSPITAL POST-GRADUATE COURSE.

SATURDAY, Oct. 1st.—10 A.M., Mr. J. B. Banister: Uterine Inertia. 11 A.M., Mr. E. A. Crook: Some Practical Points in the Treatment of Rectal Diseases. 12 A.M. Mr. C. Jennings Marshall [illegible] Treatment of Chronic [illegible] Mr. A. C. Macleod: Mod[illegible] Oral and Some Other Ty[illegible] with a Short Review of [illegible] Dr. Gordon Holmes: The [illegible] Treatment of Sphincter Disturbance. 4 P.M., Dr. C. K. J. Hamilton: Common Disorders of the Urinary Tract in Infancy and Childhood.

SUNDAY.—10 A.M., Dr. F. H. Young: Pulmonary Suppuration. 11 A.M., Mr. W. H. McMullen: The Treatment of Some Common Ophthalmic Diseases in General Practice. 12 A.M., Mr. N. C. Lake: The Surgery of the Sympathetic Nervous System. 2 P.M., Dr. W. J. Adie: Neurological Lesions of Sudden Onset. 3 P.M., Dr. E. C. Warner: The Differential Diagnosis of the Principal Causes of Jaundice. 4 P.M., Dr. K. Shirley Smith: The Treatment of Heart Failure. (This course is open only to graduates and students of the school.)

KING'S COLLEGE HOSPITAL POST-GRADUATE COURSE.

SATURDAY, Oct. 1st.—2 P.M., Mr. Yates Bell: The Treatment of *Coli Bacilluria and Pyelitis*. 2.30 P.M., Dr. J. L. Livingstone: Asthma and Desensitisation. 3.15 P.M., Mr. W. Gilliatt: A Few Practical Points in Gynæcological Cases. 3.45 P.M., Mr. Cecil Wakeley and Mr. H. L. C. Wood: Injection Treatment of Varicose Veins. 5 P.M., Dr. Douglas Firth: Felton's Antipneumococcal Serum. 3 P.M., Mr. John Everidge: Electro-coagulation Treatment of Enlarged Prostate. (This course is free to medical practitioners.)

MIDDLESEX HOSPITAL POST-GRADUATE COURSE.

FRIDAY, Sept. 30th.—2 P.M., Mr. A. E. Webb-Johnson: Operations.

SATURDAY, Oct. 1st.—10.15 A.M., Discussion introduced by Mr. F. Roques: Drugs of Value in Obstetric Practice, including Anæsthetics. 11.30 A.M., Dr. Izod Bennett: Late Rickets and Chronic Diarrhœa. 2 P.M., Mr. R. Vaughan Hudson: Demonstration of Surgical Patients.

ST. MARY'S HOSPITAL POST-GRADUATE COURSE.

FRIDAY, Sept. 30th.—10.15 A.M., Mr. A. Dickson Wright: Phlebitis. 11 A.M., Mr. Aleck W. Bourne: Backache in Women. 12 A.M., Sir William Willcox: The Systemic Effects, Diagnosis, and Treatment of Chronic Affections of the Appendix and Gall-bladder. 2.15 P.M., Mr. Leslie Williams: Anæsthesia and *Analgesia* in Obstetrics. 3.15 P.M., Dr. T. C. Hunt: Some Recent Methods of [illegible]

SATURDAY, Oct. [illegible] [illegible]lley: Purulent Nasal D[illegible] Treatment, with lantern demonstrations. 11 A.M., Dr. Robert *Hutchison: Pink Disease.* 12 A.M., Dr. Reginald Miller: School Problems in Private Practice. 2.15 P.M., Dr. S. Vere Pearson: Modern Developments in Sanatorium Treatment. 3.15 P.M., Mr. T. G. Stevens: Causation and Treatment of Maternal Injuries in Childbirth.

SUNDAY.—1[illegible] Prostatic Proble[illegible], of *B. coli* [illegible] M., [illegible]nts Mr. V. [illegible] about Appendicitis. *(This course is free to medical practitioners.)*

WESTMINSTER HOSPITAL POST-GRADUATE COURSE.

FRIDAY, Sept. 30th.—10.30 A.M., Mr. Stanley Dodd: Extra-uterine Gestation. 11.30 A.M., Mr. C. D. Read: Post-Menopausal Hæmorrhage. 3 P.M., Dr.

De Souza: Ward Demonstration. 4.30 P.M., Mr. G. Mullally: Diseases of the Colon.

SATURDAY, Oct. 1st.—11 A.M., at Springfields Mental Hospital, Dr. R. Worth: Mental Cases. This course is open only to men graduates. It is organised by the Fellowship of Medicine and Post-Graduate Medical Association, 1, Wimpole-street, W.1, from whom further particulars can be obtained.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 26th, to SATURDAY, Oct. 1st.—WESTMINSTER HOSPITAL, S.W. Post-graduate course in General Medicine and Surgery. All day. Open to men graduates only. (See above.)—BETHLEM ROYAL HOSPITAL, Monks Orchard, Eden Park, Beckenham. Tues. and Frid., at 11 A.M., Demonstration in Psychological Medicine. (Open only to Members of the Fellowship.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Sept. 27th.—4.15 P.M., Mr. H. H. Rayner: Treatment of Cancer of the Rectum.

FRIDAY.—4.15 P.M., Dr. P. B. Mumford: Demonstration of Dermatological Cases.

CENTRAL LONDON NOSE, THROAT, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Sept. 30th.—4 P.M., Mr. J. D. McLaggan: Tuberculosis of the Larynx.

Appointments

CHAPMAN, W. STANLEY, M.D. Lond., F.R.C.S. Eng., has been appointed R.M.O. Bolingbroke Hospital.

WILLIAMS, D. A. J., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for the Tregaron District of the County of Cardigan.

Vacancies

For further information refer to the advertisement columns

Archway Hospital, Archway-road, Highgate, N.—Asst. M.O. £350.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—Two H.P.'s and H.S. Each at rate of £100.

Bethnal Green Hospital, Cambridge-road, E.—Two Asst. M.O.'s. £350.

Brighton Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £150.

Bromsgrove, Worcestershire Mental Hospital, Barnsley Hall.—Second Asst. M.O. £350.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.

Central London Ophthalmic Hospital, Judd-street, W.C.—Asst. Surgeon.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—Asst. M.O. At rate of £275.

Colchester, Severalls Mental Hospital.—Jun. Asst. M.O. £510.

Dublin, Mercer's Hospital.—Hon. Visiting Surg.; also Radiologist.

East London Hospital for Children, &c., Shadwell, E.—Asst. Surgeon to Nose, Throat, and Ear Dept. Res. H.P. £125. Also Asst. Physician. £40.

Glasgow Eye Infirmary.—Clin. Assts. Each £35.

Halifax Royal Infirmary.—Third H.S. At rate of £150.

Hertford County Hospital.—H.S. At rate of £200.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Asst. Res. M.O. At rate of £150. Three H.P.'s., H.S., and Jun. H.P. Each at rate of £50.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Hon. Anæsthetist.

Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.

Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.

Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Anæsthetist. £50.

Hove, Lady Chichester Hospital.—Jun. H.P. At rate of £50.

Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.

Lambeth Hospital, Brook-street, S.E.—Asst. M.O. £350.

Leamington Spa, Warneford General Hospital.—Res. H.S. and H.P. Each £165.

Liverpool, Alder Hey Children's Hospital, West Derby.—Sen. Asst. Res. M.O. £400.

Liverpool, St. Paul's Eye Hospital, Oldhall-street.—H.S. At rate of £145.

London Lock Hospital, 91, Dean-street, W.—Surg. Reg. £100.

Maidstone, Kent County Mental Hospital.—Asst. M.O. £509.

Manchester, [illegible] Pathologist. £200. Also H.S. A[illegible]

Manchester, [illegible] *l, Pendlebury.*—Res. M.O. At rate [illegible]

Metropolitan Hospital, Kingsland-road, E.—Sen. and Jun. H.P.'s and two Cas. O.'s. Each at rate of £100.

Mile End Hospital, Bancroft-road, E.—Asst. M.O. £350.

Miller General Hospital, Greenwich-road, S.E.—Hon. Surgeon to Nose, Throat, and Ear Dept.

Paddington Green Children's Hospital, W.—H.S. At rate of £150. Also Two Clin. Assts. to Special Depts.

Park (Fever) Hospital, Hither Green, S.E.—Res. Med. Supt. £1100.

Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W. Res. M.O. At rate of £110.

Queen Charlotte's [illegible] *one-road, N.W.*—Res. M.O. for [illegible] smith, W. £200.

Queen's Hospital [illegible] *, E.*—Ophthalmic Surgeon.

Rhondda Urban District Council.—Temporary Asst. M.O. and Asst. School M.O. £500.

Royal Army Medical Corps.—25 Permanent Commissions.

Royal Eye Hospital, St. George's-circus, S.E.—Eighteen Clin. Assts. Pathologist, £100. Twelve Refractionists for L.C.C. Dept. Each £80. Also Nine Hospital Refractionists. Each £50.

Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. At rate of £150.

Royal London Ophthalmic Hospital, City-road, E.C.—Two Out-patient Officers. Each £100.

Royal Society, Burlington House, W.—Lawrence Research Studentship. £200.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Clin. Asst.

St. Helens County Borough.—Asst. M.O.H. £600.

St. Leonard's Hospital, Hoxton-street, N.—H.P. At rate of £80.

St. Leonard's-on-Sea, Buchanan Hospital.—Sen. H.S. At rate of £175.

St. Mary Islington Hospital, Highgate Hill, N.—Asst. M.O. £250.

St. Pancras Hospital, Pancras-road, N.W.—Asst. M.O. £250.

South-Eastern Hospital for Children, Sydenham, S.E.—Jun. Res. M.O. At rate of £120.

Staff[illegible].—H.S. and H.P. At r[illegible]

Sutto[illegible] £150.

Weste[illegible] *rylebone-road, N.W.*—Hon. Asst. Surgeon.

West London Hosp[illegible] W.—Hon. Anæsthetist. Also [illegible]

Westminster Hospi[illegible] Asst. H.S. At rate of £52.

Wolverhampton Royal Hospital.—H.S. for Ear, Throat, and Nose Dept. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Ulceby (Lincoln) and Guiseley (York).

Births, Marriages, and Deaths

BIRTHS

CURWEN.—On Sept. 17th, at Hove, the wife of Dr. E. Cecil Curwen, of a daughter.

HOBBS.—On Sept. 16th, at Old Court, Ealing, the wife of Dr. A. N. Hobbs, Woodville-road, Ealing, of a daughter.

MACRAE.—On Sept. 16th, at Colinton, Scotland, the wife of Alexander Murray MacRae, West African Medical Staff, of a daughter.

MCALEER.—On Sept. 10th, at Reay Bank, Helensburgh, the wife of Dr. T. B. McAleer (Nigeria), of a daughter.

PYPER.—On Sept. 11th, at Rhodes, North Berwick, the wife of Major J. C. Pyper, O.B.E., I.M.S., of a daughter.

STEEL.—On Sept. 13th, at a nursing home, the wife of Dr. W. Deane Steel, Henwick-road, Worcester, of a son.

MARRIAGES

TAYLOR—PEARSON.—On Sept. 17th, at the Church of St. Bartholomew-the-Great, Hermon Taylor, M.Ch., F.R.C.S., to Méarie Amélie, second daughter of Mr. and Mrs. A. M. Pearson, of Stamford-hill, N.

DEATHS

FREEMAN.—On Sept. 15th, at Angel Corner, Bury St. Edmunds, Colonel Ernest Carrick Freeman, C.M.G., late R.A.M.C., aged 72.

HODGSON.—On Sept. 13th, at Chalgrave, Exmouth, J. Willoughby Hodgson, O.B.E., M.D., aged 75.

MACGILLIVRAY.—On Sept. 17th, at Glencairn-crescent, Edinburgh, Charles Watson Macgillivray, M.D., F.R.C.S. Edin., aged 81.

ROSS.—On Sept. 16th, at the Ross Institute, Putney Heath, S.W., Colonel Sir Ronald Ross, K.C.B., K.C.M.G., F.R.S., Nobel Laureate, I.M.S. (retired), aged 75.

SIMSON.—On Sept. 13th, suddenly, Sir Henry John Forbes Simson, K.C.V.O., M.B., C.M., F.R.C.S. Edin., F.R.C.P. Lond., F.C.O.G., of Grosvenor-square, W., aged 59.

SYMONDS.—On Sept. 14th, at Rowney, Mount Park, Harrow-on-the-Hill, Sir Charters James Symonds, K.B.E., C.B., M.S., F.R.C.S., LL.D., Consulting Surgeon to Guy's Hospital, aged 80.

WAJID.—On Sept. 12th, Mohammed Abdul Wajid, M.D., F.R.C.S.E., M.A., B.Sc., Ch.B., D.P.H., F.R.F.P.S.G., of Harley-street, aged 46.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

HARROGATE NEW GENERAL HOSPITAL.—On Saturday last the Princess Royal opened this institution, which has cost £110,000. The administration block is in the centre of the building, and the two-storeyed wings have accommodation for 114 patients. The out-patients' department is entirely self-contained. The 50 nurses are housed in a building of three floors.

Tinto Mines, where malaria was then endemic. Laveran had found "bodies" in the red blood corpuscles, and the mosquito had been suggested as a "carrier." Macdonald had worked under Laveran, and, two months before Ross's great discovery, he had sent mosquitoes, fed on malarial blood, from Rio Tinto to Paris—but they died en route. On leaving Rio he joined his uncle, the late W. A. Mackay, at the British Clinic, Huelva, Spain, where he developed abdominal surgery to such effect that one of the main streets in that town is now named "Calle Macdonald." His contributions to surgical literature are to be found in the medical journals of England, Spain, and France; one of these recorded the results of 205 cases of gastro-enterostomy, another dealt with the prevalence of chronic gastric disease in Spain.

Of the man himself, Dr. Halliday Sutherland, his cousin, writes: "Seriousness was the main trait of his character. Everything he did, in work or recreation, he tried to do well. He was a first-rate angler and a fair shot. In tennis, golf, and cricket he studied the technique of the game. During holidays he watched the technique of other surgeons in France, England, and America. As he once remarked, 'They don't put everything in their books and articles.' He was modest, and with strangers had a grave and formal manner, but with intimate friends he showed a keen appreciation of humour. Over his cases he took great care in diagnosis and treatment; he was neither a bold nor a cautious surgeon, but operated with assurance, skill, and an eye which never overlooked the smallest detail in technique. His average time for a posterior gastro-enterostomy was *20* minutes, but he never hurried. He never wrote about a case until he had first read the literature. In conversation he was a good listener, but his critical faculty was always alert, and he had a keen appreciation of French, Spanish, and English prose. His stability and strength of character was best known to his relatives, who in times of sickness relied implicitly on his judgment."

In 1916 Dr. Macdonald married Elizabeth, second daughter of the late Peter Henderson, of Huntly, Aberdeenshire, who survives him.

THE SERVICES

ROYAL ARMY MEDICAL CORPS

Maj. D. T. Richardson, Asst. Prof. R.A. Med. Col., relinquishes his appt.

Maj. J. H. M. Frobisher retires on retd. pay.

Lts. (on prob.) R. Johnston and G. A. Kane are restored to the establishment.

Lt. E. Hicks resigns his commn.

INDIAN MEDICAL SERVICE

Lt. (on prob.) K. Jilani to be Capt. (prov.) (on prob.).

Col. L. P. Brassey retires, on account of ill-health.

ROYAL AIR FORCE

The undermentioned have been granted short service commissions as Flying Officers for three years on the active list: R. K. Muir, G. A. M. Knight, J. F. Ziegler, and F. H. Peterson.

DEATHS IN THE SERVICES

Lieut.-Colonel SANDFORD MOORE, who died on August 27th at Shankill, Co. Dublin, in his ninetieth year, was born at Forbes, Co. Longford, in 1843. In 1866 he graduated M.B. at Trinity College, Dublin, and as resident at Sir Patrick Dun's Hospital successfully nursed his colleague, S. M. Salaman, through an attack of typhus. *This was the year in which cholera* broke out in Dublin, and both residents offered to resign military commissions to remain on duty in the hospital. In the Franco-Prussian war of 1870-71 Moore served with the English Ambulance, receiving for his services both the Prussian war medal and the French bronze cross. He took part in the Ashanti war of 1873-74, and was present at Essaman. His experience in France led him to take an energetic interest in the treatment of the sick and wounded in war; he served on the central executive committee of the St. John Ambulance Association, and from 1882-86 was assistant professor of hygiene at Netley under F. S. De Chaumont. He also studied law and was called to the Bar. In 1887, being threatened with blindness, he retired with the rank of brigade-surgeon, being gazetted lieut.-colonel ten years later.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

CHARING CROSS HOSPITAL POS[illegible]

SATURDAY, Oct. 1st.—10 A.M., M[illegible] Inertia. 11 A.M., Mr. E. [illegible] Points in the Treatment of [illegible] Mr. C. Jennings Marshall: [illegible] Treatment of Chronic Prostatic [illegible] Mr. A. C. Macleod: Modern Methods of Treatment of Oral and Some Other Types of Squamous-cell Cancer with a Short Review of Late End-results. 3 P.M., Dr. Gordon Holmes: The Differential Diagnosis and Treatment of Sphincter Disturbance. 4 P.M., Dr. C. K. J. Hamilton: Common Disorders of the Urinary Tract in Infancy an[illegible]

SUNDAY.—10 A.M., Dr. F[illegible] ry Suppuration. 11 A.M., Mr. [illegible] Treatment of Some Common [illegible] in General Practice. 12 A.M., [illegible] Surgery of the Sympathetic Nervous System. 2 P.M., Dr. W. J. Adie: Neurological Lesions of Sudden Onset. 3 P.M., Dr. E. C. Warner: The Differential Diagnosis of the Principal Causes of Jaundice. 4 P.M., Dr. K. Shirley Smith: The Treatment of Heart Failure. (This course is open only to graduates and students of the *school.*)

KING'S COLLEGE HOSPITAL POST-GRADUATE COURSE.

SATURDAY, Oct. 1st.—2 P.M., Mr. Yates Bell: The Treatment of Coli Bacilluria and Pyelitis. 2.30 P.M., Dr. J. L. Livingstone: Asthma and Desensitisation. 3.15 P.M., Mr. W. Gilliatt: A Few Practical Points in Gynæcological Cases. 3.45 P.M., Mr. Cecil Wakeley and Mr. H. L. C. Wood: Injection Treatment of Varicose Veins. 5 P.M., Dr. Douglas Firth: Felton's [illegible] P.M., Mr. John Everidge: [illegible] of Enlarged Prostate. [illegible] practitioners.)

MIDDLESEX HOSPITAL POST-GRADUATE COURSE.

FRIDAY, Sept. 30th.—2 P.M., Mr. A. E. Webb-Johnson: Operations.

SATURDAY, Oct. 1st.—10.15 A.M., Discussion introduced by Mr. F. Roques: Drugs of Value in Obstetric Practice, includ[illegible], Dr. Izod Bennett: Late [illegible]hœa. 2 P.M., Mr. R. Vaugh[illegible] of Surgical Patients.

ST. MARY'S HOSPITAL POST-GRADUATE COURSE.

FRIDAY, Sept. 30th.—10.15 A.M., Mr. A. Dickson Wright: Phlebitis. 11 A.M., Mr. Aleck W. Bourne: Backache in Women. 12 A.M., Sir William Willcox: The Systemic Effects, Diagnosis, and Treatment of Chronic Affections of the Appendix and Gall-bladder. 2.15 P.M., Mr. Leslie Williams: Anæsthesia and Analgesia in Obstetrics. 3.15 P.M., Dr. T. C. Hunt: Some Recent Methods of Treatment.

SATURDAY, Oct. 1st.—10.15 A.M., Mr. Herbert Tilley: Purulent Nasal Discharges: their Diagnosis and Treatment, with lan[illegible] A.M., Dr. Robert Hutchiso[illegible].M., Dr. Reginald Miller: S[illegible] Practice. 2.15 P.M., Dr. S. Vere Pearson: Modern Developments in Sanatorium Treatment. 3.15 P.M., Mr. T. G. Stevens: Causation and Treatment of Maternal Injuries in Childbirth.

SUNDAY.—[illegible] Jones: Prostatic Proble[illegible]: Treatment of *B. col*[illegible] Diet. 12 A.M., Mr. V[illegible]oversial Points about Appendicitis. (This course is free to medical practitioners.)

WESTMINSTER HOSPITAL POST-GRADUATE COURSE.

FRIDAY, Sept. 30th.—10.30 A.M., Mr. Stanley Dodd: Extra-uterine Gestation. 11.30 A.M., Mr. C. D. Read: Post-Menopausal Hæmorrhage. 3 P.M., Dr.

One other subject is receiving much attention—namely, the "freshness" of waters and the desirability of taking them at the source. It has not yet been definitely determined what constitutes "freshness" in all cases, but in some radio-activity, colloidal properties, and electrical conditions explain certain of the phenomena observed.

REDUCTION OF TUBERCULOSIS MORTALITY IN A HUNGARIAN TOWN

IN 1925 the town of Pesterzsébet stood thirty-sixth in the list of 52 towns in Hungary as regards the mortality from tuberculosis. In 1931 the town stood first. The fact deserves record, as Dr. Eugen Szalai, the medical superintendent of the municipal lung clinic, attributes this remarkable progress to the systematic use of a vaccine. In a recent article[1] Dr. Szalai sets out some details of the course of the reduction of the mortality from tuberculosis in the town, and in meeting sundry criticisms builds up a strong case for attributing it to the prophylactic and therapeutic use of Friedmann's vaccine. In 1925 the mortality from tuberculosis in Pesterzsébet was 2·9 per 1000, and in 1931 it was 1·1, while in Pest, the commercial and industrial part of Budapest, the rate was 2·9 per 1000 in 1925 and 2·3 in 1931. A criticism made of the figures has been that deaths of inhabitants of Pesterzsébet occurring in other towns have been omitted, and Dr. Szalai set himself the gigantic task of tracking down the actual dwelling-places of all patients dying from tuberculosis in his city and in Pest and its suburbs. He shows that on this basis citizens of Pesterzsébet, wherever they died of tuberculosis, showed a mortality-rate from this disease of 4·15 per 1000 in 1925, and only 2·3 in 1931, while similar figures for Pest show only a small decrease from 2·36 in 1925 to 1·96 in 1931. The next point he makes is in answer to the criticism that his results are due to general hygienic measures. He emphasises that Pesterzsébet is a relatively unhygienic town. Only 10 per cent. of those dying from tuberculosis there had more than one room for the whole family, and only 1 per cent. of the fatal cases had a room of their own. In contrast to this he takes the town of Kleinpest, a neighbour municipality of Pest, and adjacent to Pesterzsébet. Kleinpest has a large garden suburb, where at least a third of the population live in excellent surroundings, with houses of two to three rooms. The inhabitants are mostly employees of the postal and railway services and in receipt of a steady income. Thanks to these hygienic surroundings the mortality from tuberculosis in Kleinpest has slowly decreased from 1·9 per 1000 in 1925 to 1·55 in 1931, but actually the decrease in the town where Friedmann's vaccine is used amid bad social and hygienic conditions is still greater, and the rate in 1931 is lower. A further point made by Dr. Szalai concerns the mortality from tuberculous meningitis. In 1931 eight children died from this complaint in Pesterzsébet, none of them having received the vaccine; while of 1723 children who were vaccinated with this material, either because they were suspected of having tuberculosis or because they were forced to live in the same house as a case of open tuberculosis, not a single one has become seriously affected. Dr. Szalai found that two towns in Hungary besides Pesterzsébet had shown some though less remarkable improvement in mortality from tuberculosis. In one of these he discovered that a large number of the "inhabitants" were actually inmates of a large jail where, thanks to hygienic measures, a great decrease in tuberculosis had recently been effected; while in the other place Friedmann's vaccine was also being used, although not so systematically as in Pesterzsébet. Dr. Szalai's investigations certainly merit attention. Details of his methods have been given in a previous paper[2]; he emphasises here the relative cheapness of the scheme and the complete harmlessness of the vaccine. He claims that if every early case of tuberculosis and every suspected case were inoculated, especially in childhood, tuberculosis would be irradicated completely in a comparatively short time.

STAGECRAFT FOR HOSPITAL ENTERTAINMENTS

THE Christmas entertainments in hospitals, preparation for which may begin almost with the autumn session, are as a rule very successful. This may be due to the goodwill of the audience in wards or out-patient departments, as well as to the intrinsic merits of the performance. Generally the individual artists are prepared to take great trouble in rehearsal, and if the turns lack polish, it is because the producer lacks technical equipment and knowledge. To meet his present needs a course of dramatic production will be held on alternate Sundays during the autumn at the Everyman Theatre, Hampstead, London, N.W. 3, beginning at 3 P.M. on Sunday, Oct. 9th. The course will include every branch of play production and stage technique, and programmes for staff and ward concerts of a simple, light, and effective nature will be rehearsed. The work of erecting temporary stages and devising settings will be demonstrated. The course is organised by the Little Theatre, Citizen House, Bath. The opening demonstration will be free to all interested.

CHRONIC ARTHRITIS OF THE HIP

THE work of the late Dr. Louis Duvernay on chronic osteo-arthritis of the hip has provided his son Dr. J. Graber-Duvernay with the basis for a memoir of 170 pages dealing with all phases of the treatment of this condition.[3] The first two sections are devoted to a discussion of accepted principles of medical and surgical treatment. The use of drugs, the elimination of septic foci, vaccine therapy, general principles of hygiene, physiotherapy and hydrotherapy are considered in the medical section, and the indications for trochanteric osteotomy, bifurcation osteotomy, arthrodesis, and arthroplasty are dealt with in the surgical section. The third section is the only part of the paper which has any claim to originality. A palliative operation is described which may be performed under local anæsthesia and is therefore applicable in patients too old and too fragile to withstand the shock of a major operation. Apart from certain minor modifications, the operative procedure is that which was described in 1919 by Robertson-Lavalle for the treatment of tuberculous joints. A small incision is made over the base of the great trochanter, the neck of the femur is drilled, and a long thin bone graft driven through the drill hole. Robertson-Lavalle advocated the use of an autogenous bone graft, but in osteo-arthritic joints Duvernay has found that a boiled beef bone graft 5 mm. wide and 6 cm. long is equally effective. In three cases the femoral neck was drilled and no bone graft used. It is claimed that by this operation a local hyperæmia is induced which relieves the pain, increases the range of movement, and augments the palliative effect of external thermal applications. The author attempts to provide a sound pathological basis for the operation by quoting the work of Leriche and Policard who have shown that sclerosis of bone is the result of impairment of its blood-supply. On these grounds, it is argued that the drilling of the neck of the femur will give rise to hyperæmia which will reduce the degree of sclerosis of the femoral head and therefore relieve the pain. It is unfortunate that no radiographic

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[1] Münch. med. Woch., August 26th, 1932, p. 1389.

[2] Ibid., 1929, lxxvi., 1538.

[3] Où en est le traitement de l'arthrite chronique de la hanche? Lyon: Soc. anonyme de l'imprimerie. A. Rey. 1932.

NOTES, COMMENTS, AND ABSTRACTS

THE NEW CLASSIFICATION OF WATERS

BY S. JUDD LEWIS, D.SC., F.I.C., PH.C.

UNTIL the early part of last year there was perhaps no part of the study of natural medicinal waters more disappointing than their classification. Literally scores of systems of classification had been suggested; some depending on their chemical properties, some on their concentration, some on their electro-conductivity, some on their principal medicinal properties, but none appears to have satisfied any wide class of readers nor to have given complete satisfaction to the originators.

Happily a committee, appointed by the International Society of Medical Hydrology, has now been able to propose a new classification which seems to have found universal favour. It is significant that those who had fostered systems of classification of their own have expressed their unqualified approval, and no one has levelled any serious criticism of it, either as a whole or in its details. One may assume, therefore, that this exceptionally thorny question has been settled.

The Scheme

The classification is threefold: chemical, physical, and medicinal. A formula by which the prescribed classification is expressed has been devised. Thus, in the *chemical* classification the composition is given in terms of one or more of its dominant or most active elements—for example, chloride, calcium, iron, or arsenic—while elements which are subsidiary chemically, but of medicinal interest, may be added in brackets. The concentration is given in terms of milli-normality (N/1000)—an expression familiar to all in chemistry—and the number or numbers so derived show at a glance the "strength" of the water. The "reaction," which in many cases is more or less alkaline, is given precisely in terms of the pH value of the water. In this way all that the physician needs to know regarding the classification of the chemical properties of the water is seen at a glance. It constitutes an epitome of the whole analysis. The gaseous properties of the water are also presented.

Provision is made for exhibiting the *physical* properties of the water, chief among these are the temperature of the water at the source, its tonicity, radio-activity, and occasionally its colloidal properties.

The *medicinal* classification should be based on analytical data and clinical experience, and be expressed in not more than ten words, using well-recognised descriptive terms, such as (for their internal action) aperient, diuretic, solvent, alterative, tonic; and (for their external action) temperature effects, sedative, stimulant, counter-irritant. Disorders for which the water is particularly indicated should then be named—for example, dyspepsia, rheumatism, neurasthenia, eczema. When desired this classification may be followed by directing the reader to reports in which the medicinal properties of the water are more fully discussed. The limitation to ten words may appear restrictive at first sight, but actually they are more than are used commonly as the headings of a classification.

The main idea is to present to the physician a bird's-eye view of the essential properties of a water from every angle.

An Example

How well this new classification works may be judged from the two following published examples taken from the International Register of Spas and Medicinal Waters.

WATER NO. 1

Chemical.—Composition: chloride, calcium (Br). Ionic concentration: N/1000. Total = 320; Na, 87; Ca, 71; Cl, 153; Br, 0·7; I, 0·006. Reaction: Normal; pH = 7·6.

Physical.—Cold, 10° (51° F.), hypertonic.

Medicinal.—Aperient alterative; surface action stimulant; inhalation; rheumatism, chronic catarrh; children. (See also *Medical Review*, 1912, vii., 45.)

WATER NO. 2

Chemical.—Composition: calcium, bicarbonate. Ionic concentration: N/1000. Total = 11·0; Ca, 2·9; Mg, 1·6; Mn, 0·004; Cl, 1·1; HCO_3, 4·2. Reaction: alkaline; pH = 9·2. Gaseous, nitrogen.

Physical.—Thermal, 22° (72° F.). Radio-active.

Medicinal.—Diuretic, solvent; surface action sub-thermal, sedative; fibrositis, gout, renal insufficiency.

Expressing the concentration in terms of milli-normality *enables one to make comparisons* of waters in every direction; thus in these examples Ca : Ca = 71 : 2·9 (i.e., 24 to 1); Cl : Cl = 153 : 1·1 (140 to 1); Cl : Ca = 153 : 71 (2 to 1); Ca : total = 71 : 320 (nearly 1 to 4) in No. 1, or 2·9 : 11 (1 to 4) in No. 2 also; but Cl : total = 153 : 320 (1 to 2) in No. 1, or 1·1 : 11 (1 to 10) in No. 2. It is easy to visualise the desired ratio at a glance.

Advantages

It is very desirable that this classification should be followed in this country as closely as possible. It serves the prime purpose of classification—namely, to enable comparison of one water with another. It is perhaps unique in making provision for presentation of valuable elements occurring in only very small quantity which have received far too little attention in the past. This is exemplified with two elements in the foregoing examples—namely, iodine in the first, 0·006, and manganese in the second, 0·004. When it is considered that iodine in so small a quantity as 46 parts per 1000 millions of London water determines the health of the community in certain aspects, especially in avoiding goitre, and that manganese in similar proportion will influence the productivity of many plants, these small quantities cannot possibly be passed by as of no significance.

It is desirable that increased attention should be paid to the international direction that "the medicinal classification should be based on analytical data" as well as on clinical experience. The science and practice of analytical chemistry have made such strides during the last few years that analyses made a generation ago cannot be considered adequate to modern requirements of medicine. Numerous published analyses of springs give nothing beyond data relating to those elements present in largest proportion, those elements occurring in small quantity being wholly neglected. Difficulties experienced formerly in their discovery have been entirely removed since the introduction of the modern quartz spectrograph and recent methods of micro-analysis. Prof. M. Loeper[1] believes that the rôle of boron in waters is important, and shows that it is found in 11 out o 12 French waters examined. I found boron by means of the spectrograph in the majority of British waters of various kind, and raised the same question 18 years ago.[2] One may also learn, from the work of W. Brenchley and others, that "the function of boron" (1 in 12,500,000 to 1 in 25,000) "in the case of the broad bean appears to be probably nutritive rather than catalytic, since a supply is required throughout the life of the plant. A parallel is drawn between the action of boron on plants and the vitamins on animal life" (Lewis[3]).

The new classification exhibits all important information common to the vast majority of natura waters, and hence it is as much as can be done on an international basis; but it also gives space for addin details of special character—for example, for describing the biological activities of a water; its colloida properties; its liability to change or otherwise by bottling; and other features of local interest.

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[1] Arch. of Med. Hydrology, May, 1932.

[2] Jour. Soc. Chem. Ind., 1916, xxxv., 661.

[3] Arch. of Med. Hydrology, 1924, p. 188.

ADDRESSES AND ORIGINAL ARTICLES

LOCAL OUTBREAK OF DEVONSHIRE COLIC

BY M. C. N. JACKSON, M.B. LOND.

AND

L. N. JACKSON, *M.C.*, D.M. OXF.

ALTHOUGH Devonshire colic was probably an ndemic disease long before that time, its cause was ot determined until the latter part of the eighteenth ntury. G. Musgrave,[1] in 1703, stated that the colic hich occurred in Devonshire and which was somemes associated with paralysis was due to the ccessive consumption of crude cider which was too id. J. Huxham,[2] who in 1752 graphically described e colicky pains and paralysis, took the view that e disease was caused by the tartar extracted from e apples in the process of cider brewing. It was ot until 1767 that Sir George Baker, an alertinded Devonian, finally recognised that lead colic nd Devonshire colic were one and the same disease. e demonstrated[3] that Devonshire cider contained ad, whereas Herefordshire cider did not, and rther drew attention to the fact that in Devonshire he cider presses and storage tanks were very comonly lead-lined. His exposure of this practice, and hat of "correcting" sour cider by the addition of etallic lead, litharge, or lead acetate, produced a torm of criticism, and he was denounced as a traitor o his county.

Lead has long ceased to play any part in the nanufacture or storage of cider, nevertheless minor outbreaks of plumbism among cider-drinkers occur rom time to time. The following is an account of such an outbreak recently noted among habitual cider-drinkers in a country district near Exeter. When the connexion between plumbism and cider-drinking first became evident to us, the public-houses frequented by our patients were investigated. It was found that certain of the publicans were in the habit of drawing their cider from the cask to the engine through lead pipes. Subsequent analysis of samples of cider (*a*) from cask and (*b*) from engine proved that lead contamination occurred in the conducting pipes and not, as in Baker's cases, during the process of manufacture or storage. In passing, it is interesting to note the relative insusceptibility of most persons to this form of lead poisoning as indicated by the comparatively few cases that have come to us complaining of symptoms, despite the fact that much of the cider drunk in this district must have been thus contaminated for many years.

Clinical Notes

All our cases occurred in males. Other sources of lead intake were, as far as possible, excluded. The cases fall into two groups: 1. Those complaining of symptoms referable to lead poisoning. 2. Symptomless cases investigated because they were known to be habitual cider-drinkers frequenting the same public-houses as those in group 1.

The clinical examinations of these cases were made in the autumn of 1931.

1. CASES WITH SYMPTOMS

CASE 1.—A. B., aged 59, an army pensioner, has had repeated attacks of intestinal colic and constipation since 1922. In 1926 pallor and loss of power in both forearms were noted. In 1928 a stippled blue line appeared on the gums. The weakness and wasting of forearms and hands have increased since then. He had malaria and typhoid in 1898 and acute urethritis in 1900, followed by urethral strictures and several attacks of gonococcal arthritis. There is no history of headaches or fits. He has been a cider-drinker for 20 years, and admits to a maximum of five pints daily. Since the war he has been obtaining his cider from houses A, B, and C. He was a large pale man with bilateral wrist-drop, and a stippled blue line on the gums round his few remaining teeth. Blood pressure 165/100. There were no other relevant physical signs.

Laboratory findings.—Blood: red cells 3,300,000 per c.mm., hæmoglobin 48 per cent., punctate basophilia present. Urine: albumin and pus present, lead present. Wassermann reaction negative.

CASE 2.—C. D., aged 60, a foreman labourer employed by the district council. Complained of attacks of giddiness in 1923, and nystagmus was noted at that time. This symptom and sign were again noted in 1928. In November, 1929, he began to have attacks of severe intestinal colic with vomiting and constipation. At this time weakness of wrists was complained of and a blue line noted. In February, 1930, when pulling on a rope, he noticed sudden marked increase of weakness in his hands and wrists. He also noticed for the first time some weakness of his legs. There is no history of headaches or fits. Although he only admits to a maximum of three pints daily he is known to have been a heavy cider-drinker for at least ten years, and to have frequented all the public-houses in the town during this time. His friends state that he has often obtained a free drink by offering to consume the first glass of cider drawn from the engine in the morning. In June, 1930, he was admitted to the Royal Devon and Exeter Hospital under the care of Dr. Charles Seward, where he was found to have diabetes mellitus. There was wasting of both hands, especially the thenar muscles, and loss of power in the extensors of both wrists. Albuminuria and punctate basophilia were found. In July, 1931, he was admitted to the London Hospital under the care of Dr. Donald Hunter. The diagnosis of diabetes mellitus was confirmed. Blood pressure 135/85. There was gross wasting of both forearms, weakness and wasting of extensors of wrists and small muscles of hands, and of both legs below the knees, especially of dorsi-flexors. There was also analgesia to pinprick, heat, and cold over the segmental areas C.4 to D.2 on both sides.

Laboratory findings.—Blood: red cells 4,000,000 per c.mm., hæmoglobin 64 per cent., punctate basophilia present. Urine: sugar and albumin present, lead not found. Wassermann reaction negative. Fæces: lead present.

In the opinion of Dr. Donald Hunter and Dr. George Riddoch the paralysis of the upper limbs and the areas of analgesia were due to a hæmatomyelia incurred at the time of the accident while felling trees. The foot-drop was evidently due to lead palsy, and it improved following two long courses of ammonium chloride, together with a low calcium diet.

CASE 3.—E. F., aged 50, a general labourer, was referred for dental treatment in 1928, at which time a stippled blue line on the gums was noted. In September, 1929, he complained of morning retching, central abdominal pain, and loss of weight. In January, 1930, he complained of abdominal pain and constipation, and was pale, wasted, and tremulous. In April, 1931, he had a return of abdominal symptoms, and was admitted to the Royal Devon and Exeter Hospital under the care of Dr. C. J. Fuller. He had typhoid in 1915, but had always been otherwise healthy. There is no history of headaches or fits. He began to drink cider in 1921, having previously been a beer-drinker. He admits to an average consumption of five pints daily, rising occasionally to ten pints daily. He obtains his cider from houses A, B, D, E, F, and G. He has, acting on advice, given up cider since his discharge from hospital, and has much improved. He was a healthy-looking, edentulous man, with a dull mentality. Blood pressure 140/95. There was slight wasting of the small muscles of both hands but no noticeable weakness and a fine tremor of the tongue and hands.

Laboratory findings.—Blood: punctate basophilia present. Urine: lead present, no albumin found.

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[1] De arthritide symptomica, Oxoniæ, 1703.

[2] Opusculum de Morbo Colico Damnoniensi. Lond., J. Hinton, 1752.

[3] Med. Trans. Lond., 1772, i., 175.

evidence is brought forward to support the theory. Moreover, it is curious that in the first case recorded, the drill hole and graft were badly placed and instead of lying in the femoral neck, the graft is situated horizontally in the upper shaft of the femur at the level of the small trochanter; and yet it is claimed that there was complete restoration of joint movement, relief of pain, and a 90 per cent. improvement in the condition of the joint, which had been maintained when the patient was re-examined 12 months later. Ten cases are described in detail and all of the results are said to be satisfactory. In none of the cases has a sufficient period of observation been maintained to convince the reader that the improvement will be lasting. It is difficult to believe that simple drilling of the neck of the femur can permanently alter the vascular relationships of the bone, and since we know that transplanted beef bone is fairly rapidly absorbed, and the host bone restored to its original condition, it is not easy to see how drilling and grafting can give rise to more than a temporary alleviation of symptoms, even if it be accepted that the hyperæmia so induced does in fact give rise to the degree of improvement which is claimed.

A QUESTION OF ASSESSMENT

A PRACTITIONER asks whether he is entitled to deduct from his income-tax return some very heavy medical fees paid with the object of being kept fit for work—which would otherwise have been impossible. The point, we are informed, is dealt with quite definitely in the Income Tax Acts. Among the rules governing Schedule "D" is to be found one which states that no sum shall be deducted in respect of any disbursements or expenses of maintenance of the parties, or of any sums expended for private purposes distinct from the purposes of the vocation. The passage is somewhat involved and may be misread, but in practice it definitely excludes medical treatment of the tax-payer, although on common-sense grounds the retention or regaining of a healthy bodily condition might well be regarded as essential for professional work.

NATURAL RADIUM WATER

"A. B.," having read the article entitled Radium as a Pharmaceutical Poison, by Dr. H. A. Colwell and Prof. Sidney Russ, in THE LANCET of July 23rd (p. 221), writes to ask whether the continued internal use of natural radium waters, or of water containing thorium, is devoid of risk, especially the risk of provoking cancer. We are assured that there is no evidence to show that any body of people have been harmed by drinking pure natural waters which contain radium and thorium. The references in the article mentioned were to the occurrence of sarcoma following the drinking of water in which the natural radio-active content had been artificially raised. Presumably if it had been raised with thorium to the same radio-active degree as with radium the results would have been similar, but there seems no reason for apprehension where a natural product is in question.

EARLY SIGNS OF MAJOR MENTAL DISORDERS

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ADDRESSES AND ORIGINAL ARTICLES

LOCAL OUTBREAK OF DEVONSHIRE COLIC

BY M. C. N. JACKSON, M.B. LOND.

AND

L. N. JACKSON, *M.C.*, D.M. OXF.

ALTHOUGH Devonshire colic was probably an
lemic disease long before that time, its cause was
t determined until the latter part of the eighteenth
tury. G. Musgrave,[1] in 1703, stated that the colic
ich occurred in Devonshire and which was some-
es associated with paralysis was due to the
cessive consumption of crude cider which was too
id. J. Huxham,[2] who in 1752 graphically described
e colicky pains and paralysis, took the view that
e disease was caused by the tartar extracted from
e apples in the process of cider brewing. It was
t until 1767 that Sir George Baker, an alert-
inded Devonian, finally recognised that lead colic
d Devonshire colic were one and the same disease.
e demonstrated[3] that Devonshire cider contained
ad, whereas Herefordshire cider did not, and
rther drew attention to the fact that in Devonshire
e cider presses and storage tanks were very com-
only lead-lined. His exposure of this practice, and
at of "correcting" sour cider by the addition of
etallic lead, litharge, or lead acetate, produced a
orm of criticism, and he was denounced as a traitor
his county.

Lead has long ceased to play any part in the
anufacture or storage of cider, nevertheless minor
utbreaks of plumbism among cider-drinkers occur
om time to time. The following is an account of
uch an outbreak recently noted among habitual
ider-drinkers in a country district near Exeter.
Vhen the connexion between plumbism and cider-
rinking first became evident to us, the public-
ouses frequented by our patients were investigated.
t was found that certain of the publicans were in
he habit of drawing their cider from the cask to the
ngine through lead pipes. Subsequent analysis of
amples of cider (*a*) from cask and (*b*) from engine
roved that lead contamination occurred in the con-
lucting pipes and not, as in Baker's cases, during
he process of manufacture or storage. In passing,
t is interesting to note the relative insusceptibility
f most persons to this form of lead poisoning as
ndicated by the comparatively few cases that have
ome to us complaining of symptoms, despite the
fact that much of the cider drunk in this district
must have been thus contaminated for many years.

Clinical Notes

All our cases occurred in males. Other sources of lead intake were, as far as possible, excluded. The cases fall into two groups: 1. Those complaining of symptoms referable to lead poisoning. 2. Symptomless cases investigated because they were known to be habitual cider-drinkers frequenting the same public-houses as those in group 1.

The clinical examinations of these cases were made in the autumn of 1931.

1. CASES WITH SYMPTOMS

CASE 1.—A. B., aged 59, an army pensioner, has had repeated attacks of intestinal colic and constipation since 1922. In 1926 pallor and loss of power in both forearms were noted. In 1928 a stippled blue line appeared on the gums. The weakness and wasting of forearms and hands have increased since then. He had malaria and typhoid in 1898 and acute urethritis in 1900, followed by urethral strictures and several attacks of gonococcal arthritis. There is no history of headaches or fits. He has been a cider-drinker for 20 years, and admits to a maximum of five pints daily. Since the war he has been obtaining his cider from houses A, B, and C. He was a large pale man with bilateral wrist-drop, and a stippled blue line on the gums round his few remaining teeth. Blood pressure 165/100. There were no other relevant physical signs.

Laboratory findings.—Blood: red cells 3,300,000 per c.mm., hæmoglobin 48 per cent., punctate basophilia present. Urine: albumin and pus present, lead present. Wassermann reaction negative.

CASE 2.—C. D., aged 60, a foreman labourer employed by the district council. Complained of attacks of giddiness in 1923, and nystagmus was noted at that time. This symptom and sign were again noted in 1928. In November, 1929, he began to have attacks of severe intestinal colic with vomiting and constipation. At this time weakness of wrists was complained of and a blue line noted. In February, 1930, when pulling on a rope, he noticed sudden marked increase of weakness in his hands and wrists. He also noticed for the first time some weakness of his legs. There is no history of headaches or fits. Although he only admits to a maximum of three pints daily he is known to have been a heavy cider-drinker for at least ten years, and to have frequented all the public-houses in the town during this time. His friends state that he has often obtained a free drink by offering to consume the first glass of cider drawn from the engine in the morning. In June, 1930, he was admitted to the Royal Devon and Exeter Hospital under the care of Dr. Charles Seward, where he was found to have diabetes mellitus. There was wasting of both hands, especially the thenar muscles, and loss of power in the extensors of both wrists. Albuminuria and punctate basophilia were found. In July, 1931, he was admitted to the London Hospital under the care of Dr. Donald Hunter. The diagnosis of diabetes mellitus was confirmed. Blood pressure 135/85. There was gross wasting of both forearms, weakness and wasting of extensors of wrists and small muscles of hands, and of both legs below the knees, especially of dorsi-flexors. There was also analgesia to pinprick, heat, and cold over the segmental areas C.4 to D.2 on both sides.

Laboratory findings.—Blood: red cells 4,000,000 per c.mm., hæmoglobin 64 per cent., punctate basophilia present. Urine: sugar and albumin present, lead not found. Wassermann reaction negative. Fæces: lead present.

In the opinion of Dr. Donald Hunter and Dr. George Riddoch the paralysis of the upper limbs and the areas of analgesia were due to a hæmatomyelia incurred at the time of the accident while felling trees. The foot-drop was evidently due to lead palsy, and it improved following two long courses of ammonium chloride, together with a low calcium diet.

CASE 3.—E. F., aged 50, a general labourer, was referred for dental treatment in 1928, at which time a stippled blue line on the gums was noted. In September, 1929, he complained of morning retching, central abdominal pain, and loss of weight. In January, 1930, he complained of abdominal pain and constipation, and was pale, wasted, and tremulous. In April, 1931, he had a return of abdominal symptoms, and was admitted to the Royal Devon and Exeter Hospital under the care of Dr. C. J. Fuller. He had typhoid in 1915, but had always been otherwise healthy. There is no history of headaches or fits. He began to drink cider in 1921, having previously been a beer-drinker. He admits to an average consumption of five pints daily, rising occasionally to ten pints daily. He obtains his cider from houses A, B, D, E, F, and G. He has, acting on advice, given up cider since his discharge from hospital, and has much improved. He was a healthy-looking, edentulous man, with a dull mentality. Blood pressure 140/95. There was slight wasting of the small muscles of both hands but no noticeable weakness and a fine tremor of the tongue and hands.

Laboratory findings.—Blood: punctate basophilia present. Urine: lead present, no albumin found.

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[1] De arthritide symptomatica, Oxoniæ, 1703.

[2] Opusculum de Morbo Colico Damnoniensi. Lond., J. Hinton, 1752.

[3] Med. Trans. Lond., 1772, i., 175.

evidence is brought forward to support the theory. Moreover, it is curious that in the first case recorded, the drill hole and graft were badly placed and instead of lying in the femoral neck, the graft is situated horizontally in the upper shaft of the femur at the level of the small trochanter; and yet it is claimed that there was complete restoration of joint movement, relief of pain, and a 90 per cent. improvement in the condition of the joint, which had been maintained when the patient was re-examined 12 months later. Ten cases are described in detail and all of the results are said to be satisfactory. In none of the cases has a sufficient period of observation been maintained to convince the reader that the improvement will be lasting. It is difficult to believe that simple drilling of the neck of the femur can permanently alter the vascular relationships of the bone, and since we know that transplanted beef bone is fairly rapidly absorbed, and the host bone restored to its original condition, it is not easy to see how drilling and grafting can give rise to more than a temporary alleviation of symptoms, even if it be accepted that the hyperæmia so induced does in fact give rise to the degree of improvement which is claimed.

A QUESTION OF ASSESSMENT

A PRACTITIONER asks whether he is entitled to deduct from his income-tax return some very heavy medical fees paid with the object of being kept fit for work—which would otherwise have been impossible. The point, we are informed, is dealt with quite definitely in the Income Tax Acts. Among the rules governing Schedule "D" is to be found one which states that no sum shall be deducted in respect of any disbursements or expenses of maintenance of the parties, or of any sums expended for private purposes distinct from the purposes of the vocation. The passage is somewhat involved and may be misread, but in practice it definitely excludes medical treatment of the tax-payer, although on common-sense grounds the retention or regaining of a healthy bodily condition might well be regarded as essential for professional work.

NATURAL RADIUM WATER

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liminary step, two houses (B and C) were investi- ed, in which the cider was known to be drawn m cask to engine through 12 to 16 ft. of lead ing. In each case a sample of cider was taken ect from the cask—i.e., as supplied by the manu- turer—and proved, on analysis, to be lead-free. each case, also, a sample of cider was drawn from e engine early in the morning, thus ensuring its ving been in contact with the lead pipe all night. th these samples proved, on analysis, to contain 15 gr. per gallon of lead. In consequence of this, d in accordance with instructions from the county edical officer of health, all the houses in the area ere warned to desist from using lead pipes for rawing cider. Some months later it was brought our notice that four publicans (houses, A, D, G, nd I) were still drawing cider through lead pipes ned with tin. They had been assured by the makers f such pipes that absorption of lead could not occur rom them, and that they were perfectly safe cider onductors. To test this assertion, samples of cider ere collected from the engines of the four houses n question. In all these cases the cider was drawn n the afternoon, after it had been standing in contact with the tin-lined pipes for three hours. Analysis f these four samples revealed the presence of lead n all of them in amounts varying from 1/20 to /10 gr. per gallon. Samples of cider taken direct rom the wood in these four houses were lead-free. In the remaining houses in this town (E, F, H, and J) he cider was known to be drawn direct from the wood. The facts concerning the village house K are suggestive but not conclusive. Cases 9 and 10 came from the same village, and were in the habit of drinking cider at the same public-house K. The publican, on being questioned, maintained that it was his invariable custom to draw cider direct from the wood. A sample of this cider was accordingly analysed and found to be lead-free. Since, however, both patients insisted that they had been served at this house with cider drawn through an engine, further discreet inquiries were made in the neighbourhood which elicited evidence in support of their statements. Nevertheless, the charge must remain non-proven, since no sample of engine cider could be obtained for analysis. The cider in house L, which was known to be drawn straight from the wood, was not investigated.

Analysis of Cider for Lead

House.	Patients frequenting.	Method of drawing cider.	Make of cider.	Result of analysis for lead:—Cider from cask: nil in all samples examined. Cider through pipe (gr. per gallon).
A	7	From engine through a tin-lined pipe.	Proprietary brand X.	1/10
B	6	From engine through lead pipe.	Proprietary brand Y.	1/15
C	5	" "	Proprietary brand Z.	1/15
D	5	From engine through a tin-lined pipe.	Farm-brewed.	1/10
E	6	From wood.	" "	—
F	5	" "	Home-brewed at house G.	—
G	6	From engine through a tin-lined pipe.	Home-brewed.	1/10
H	2	From wood.	Proprietary brand Y.	—
I	2	From engine through a tin-lined pipe.	Proprietary brand Y; also farm-brewed.	1/20
J	1	From wood.	Proprietary brand X.	—
K	2	Doubtful.	Not known.	Not known.

NOTE ON METHOD OF ANALYSIS OF CIDER FOR LEAD

The detection and quantitative estimation of lead *in all the above samples of cider* was carried out by Mr. Thomas Tickle, public analyst to the county of Devon, whose assistance we desire gratefully to acknowledge. The process he used was to remove organic matter by oxidation with nitric acid in the presence of concentrated sulphuric acid. After evaporating the sulphuric acid to eliminate the effect of iron by the method described by R. Wilkie[6] he matched the colour produced by sodium sulphide with that given in like association by a known quantity of lead.

Summary.

1. The occurrence of a small outbreak of lead colic in a Devonshire town is recorded.
2. The source of lead in the cider causing this outbreak was found to be the conducting pipes used in certain public-houses to draw cider from cask to engine.
3. Clinical notes are given of ten cases with symptoms. The following characteristics were common to all: attacks of colic and constipation; a stippled blue line on the gums; punctate basophilia; excretion of lead either in the urine or fæces. Four cases had muscular weakness or wasting, with tremors. In three cases the abdominal symptoms were so severe as to warrant a diagnosis of acute intestinal obstruction, and in one case the abdomen was explored. Albuminuria was found in two cases. No further acute symptoms of lead poisoning were observed after the patients had been warned against drinking cider drawn from the engine.
4. Clinical notes are given of three symptomless cases. Of these, two had a stippled blue line on the gums, two were excreting lead in the urine, and one had punctate basophilia.
5. Eleven public-houses were investigated. In six of these lead was found in the cider as drawn by the bar engine, though samples from the cask were in all cases investigated free from lead.
6. None of the cases coming to our notice occurred among pure beer drinkers, although lead pipes have been, and in some cases still are, used for conducting beer. This points to the conclusion that cider is a more active solvent of lead than is beer, owing to its greater acidity.
7. We would also suggest that the acidity of cider tends to keep the lead mobilised in the tissues, and therefore liable to produce symptoms of plumbism more readily than similar quantities ingested in a more alkaline medium, such as water or beer.
8. The occurrence of this outbreak shows that the possibility of plumbism from this source should always be kept in mind in cider-drinking areas.

In addition to Mr. Tickle, our thanks are due to Dr. Donald Hunter for his persistent help and encouragement; to Dr. W. Robb, pathologist to the Royal Devon and Exeter Hospital, for allowing one of us to use his laboratory and apparatus, and for his skilled help and advice; to Dr. Horton Date, assistant county medical officer of health; to Dr. H. F. L. Hugo, the local medical officer of health; and to Drs. Roper, Fuller, and Seward, of the Royal Devon and Exeter Hospital, for allowing us access to their patients and case notes. A word of praise is due to the patients, many of whom allowed themselves to be investigated in spite of being free from symptoms at the time; and finally to the publicans, who coöperated in a public-spirited manner.

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[6] Jour. of the Soc. of Chem. Industry, 1909, xxviii., 636.

CASE 4.—G. H., aged 70, a farm labourer, had attacks of giddiness and an irregular pulse in 1921. In 1922 he had dyspnœa, tachycardia, and a fainting attack. In 1925 dyspnœa and tachycardia were again noted. In July, 1930, he had an attack of acute intestinal obstruction; was admitted to hospital, where a laparotomy was performed. Nothing was found to account for his symptoms, and he made an uneventful recovery. In October, 1930, he had an attack of colicky abdominal pain, and constipation relieved by enemata. A month later he had another similar attack. In January, 1931, he had a further attack, and a stippled blue line noticed on the gums. He was warned off cider, and has been free from symptoms since. There is no history of headaches or fits. He has been a moderate cider-drinker all his life, and admits to one pint daily, obtained from either house C or house D. He was a fairly healthy-looking old man, with a slightly tremulous, furred tongue. A stippled blue line was present on the gums. Blood pressure 130/90. There was a fine tremor of hands and some wasting of both thenar eminences. He has noticed slight weakness of both wrists, the left more so than the right. He is a left-handed man.

Laboratory findings.—Blood: very occasional red cells showing punctate basophilia. Urine: small amount of lead present, no albumin.

CASE 5.—I. J., aged 48, a labourer, had an attack of colicky abdominal pain and constipation in 1922. He had further similar attacks in 1923, 1929, and 1930. A stippled blue line on the gums was noted in 1929. There is no history of headaches or fits. He has drunk cider for the last ten years and admits to three or four pints daily, which he obtains from houses A, C, D, E, F, and G. He used to have the first drink at 11 A.M., but latterly has studiously avoided doing so. He was a healthy-looking man with a slightly furred tongue. A stippled blue line on the gums was present. Blood pressure 140/85. No other abnormality found.

Laboratory findings.—Blood: punctate basophilia present. Urine: lead present, no albumin.

CASE 6.—K. L., aged 33, a labourer, has had several attacks of colicky abdominal pain and constipation since February, 1931. There is no history of headaches or fits nor of any other illness. He has been a cider-drinker all his life, and admits to two or three pints daily which he obtains from houses E, F, and G. He never drinks cider before 6 P.M. Nothing abnormal was found except a stippled blue line on the gums. Blood pressure 140/90.

Laboratory findings.—Blood: punctate basophilia present. Urine: lead present in small amount, no albumin.

CASE 7.—M. N., aged 36, a labourer latterly employed as cleaner at house C, had two attacks of colicky abdominal pain, vomiting, and constipation, each lasting for about a week in January and February, 1931. In May, 1931, he had a third attack which was more severe and lasted a fortnight. There is no history of headaches or fits. In 1918 he was invalided out of the Army with "stomach trouble." He has drunk cider regularly since 1918. He admits to three pints daily, and frequents all the houses in the town. He used to have the first drink in the morning till warned against it in 1931. He was a somewhat pale, under-sized man. Nothing else abnormal was found except a stippled blue line on the gums. Blood pressure 130/85.

Laboratory findings.—Blood: films unsatisfactory. Urine: lead present, no albumin.

CASE 8.—O. P., aged 41, a sawyer, had several attacks of colicky abdominal pain, constipation, and vomiting in 1930. In May, 1931, he had a fit which came on suddenly without warning; he was seen to throw his head up, spin round, and fall. When seen immediately afterwards by one of us (L. N. J.) he was pale, twitching, and foaming at the mouth. He had bitten his tongue, was vomiting repeatedly, and complaining of intense headache. An hour later he had recovered almost completely. There was no previous history of headaches or fits or of any other illness. He has been a cider-drinker all his life, and admits to five or six pints daily, which he obtains from houses B, C, E, G, H, and I. He habitually has a drink at 11 A.M., and often has the first drink drawn.

On examination after recovery from the fit he had a good colour. There was a stippled blue line present on the gums and a fine tremor of the tongue and hands. Blood pressure 140/90. No other abnormality found.

Laboratory findings.—Blood: punctate basophilia present. Urine: lead present in considerable amount, no albumin.

The remaining two cases in this group do not belong to this town, but come from a village some ten miles distant. They were admitted to the Royal Devon and Exeter Hospital under the care of Dr. Frank Roper and Dr. Charles Seward respectively.

CASE 9.—Q. R., aged 56, a platelayer, has had repea attacks of colicky abdominal pain and constipation si 1927. Barium X ray investigation in 1927 and again i 1931 revealed no cause for his symptoms. The attack became more severe and, in the most recent attack, h vomited. He was admitted to the Royal Devon a Exeter Hospital as a case of acute intestinal obstructio but the diagnosis was revised in time to save him fro operation. There is no history of headache, fits, muscul weakness, or any previous disability. He has drunk cid all his life, and admits to two pints daily, which he invariabl obtains from house K. When examined he was not pal A stippled blue line was present on the gums. Blood pressure 120/90. No other abnormality found.

Laboratory findings.—Blood: red cells 4,000,000 per c.mm., hæmoglobin 46 per cent., punctate basophilia present. Urine: lead present, no albumin.

CASE 10.—S. T., aged 59, a farm labourer, has durin the last year had two severe attacks of colicky abdomin pain and constipation, each lasting from two to three day In the second attack he vomited, and was admitted to th Royal Devon and Exeter Hospital as a surgical emergency No operation was performed. There is no history of head aches, fits, or muscular weakness. He has been a cide drinker for one year, and admits to two to three pin daily, which he obtains from houses K and L. He stat that the cider is drawn through an engine in house K, b that it comes straight from the wood in house L. Wh examined he was not pale. A doubtful stippled blue li was present on the gums. Blood pressure 125/85. No oth abnormality found.

Laboratory findings.—Blood: punctate basophilia prese Urine: lead present, no albumin.

2. SYMPTOMLESS CASES

CASE 11.—U. V., aged 39, a golf club steward and barm had ascites in January, 1931, which was thought to be d to portal cirrhosis, and which cleared up completely two months without special treatment. He had a "nerv breakdown" three years ago, and an injury to the seven cervical vertebra during the war. This resulted in wea ness of the left arm and right leg, on account of wh he was invalided out of the Army. There is no history headache or fits. He admits to having drunk four pi of cider daily since 1918 until he developed ascites, si when he has substituted beer. He frequents houses A, and D. He was a pale, thin, slightly built man, with cari teeth and a doubtful stippled blue line on the gums. Th was a fine tremor and wasting of the small muscles of b hands, especially the left. Blood pressure 120/80. No ot relevant abnormality found.

Laboratory findings.—Blood: punctate basophilia present. Urine: no lead, no albumin.

CASE 12.—W. X., aged 30, a labourer, has no medi history. He admits to two to six pints of cider daily. usually has his first drink at 11 A.M., and sometimes the first drink drawn. He frequents houses A, B, E, and G. On examination nothing abnormal was fou except a fine tremor of the hands. Blood pressure 140/

Laboratory findings.—Blood: punctate basophilia present. Urine: a trace of lead present, no albumin.

CASE 13.—Y. Z., aged 64, a general labourer, has medical history. He admits to six pints of cider da all obtained at house A. There was a stippled blue on the gums round his few remaining teeth. Bl pressure 140/80. No other abnormality found.

Laboratory findings.—Blood: slight punctate basoph Urine: lead present, no albumin.

NOTE ON LABORATORY METHODS EMPLOYED

The blood films were fixed with methyl-alcohol stained with Unna's alkaline methylene-blue soluti For the detection of lead in the urine, L. T. Fairh chromate method was used [4]; five or six days' outpu urine being collected under toluol in each case. The e mations were not carried further than the stage of cipitation of lead chromate and are therefore only qualitat Every urine was also examined by J. C. Thresh's sulph method,[5] and the results were comparable.

Examination of Public-houses and Cider

Eleven public-houses came under suspicion. of them are in this town, the eleventh in a vill ten miles away. Inquiries into the methods of ci storage and supply to consumers were made in cases, but it was not found practicable to obt samples of cider for analysis in every case. As was admitted after a severe hæmatemesis in a collapsed ition; he made a good recovery, and the bleeding ped, but the ulcer perforated on July 15th, and he died he operating table before the operation was started. ost mortem.—A large perforation of a very large, chronic, lle-shaped ulcer of the lesser curvature.

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[4] Medicine, Baltimore, 1925, iv., 1.

[5] The Analyst, 1924, xlix., 124.

'oman, aged 56. Admitted Nov. 13th, 1928; died . 21st. She gave a two years' history suggesting a ric ulcer, and she was admitted three days after a re hæmatemesis; her progress was satisfactory until rforation of the ulcer occurred on Nov. 21st; she died after operation. *Post mortem* showed perforation large and very chronic ulcer on the middle of the r curvature of the stomach, complicated by general tonitis.

an, aged 49. Admitted June 18th, 1926; died June 30th. gave a long and rather indefinite history of dyspepsia, was admitted with hæmatemesis and melæna of a k's duration. He did very well, but 12 days after ission he had a fit, collapsed, and died in coma in eight rs. *Post mortem.*—The stomach showed three ulcers, almost encircling the organ and starting at the greater vature, a second near the cardia, and healed, and a d on the greater curvature proximal to the first with eroded vessel in its base. The left kidney showed ensive tuberculous disease, and miliary tuberculosis was sent with tuberculous meningitis.

lan, aged 58. Admitted March 9th, 1927; died rch 13th. The patient had a history of a duodenal ulcer two years; he was admitted blanched after a hæmatesis, and in spite of this his blood pressure was 230/170. bleeding proved to be uncontrollable, and he died. *t mortem.*—A circular chronic ulcer was found in the t part of the duodenum, with an eroded vessel at its e; the kidneys showed an advanced condition of primary nular contracted kidney.

Corrected mortality.—In reckoning the mortality m the point of view of hæmatemesis, it would seem missible to exclude the two cases of perforation, l the case of tuberculous meningitis. This would e a corrected mortality as follows:—

72 cases with 8 deaths—mortality 11·5 per cent.
50 males „ 7 „ — „ 14 „
22 females „ 1 death— „ 4·5 „

The sites of the ulcers in the fatal cases were as lows: no autopsy, 1 case; duodenum, 2 cases; ser curvature, middle, 3 cases; cardia (3 ulcers), case; greater curvature, near cardia, 1 case; sophagus and pylorus, 1 case; pylorus, 2 cases.

Chronic gastric and duodenal ulcers.—On clinical d other grounds the following differentiation was ade:—

	Cases.
Gastric ulcers (X ray, operation, or autopsy confirmation)	24
Gastric ulcers (clinical diagnosis without confirmation)	34
Duodenal ulcers (X ray, operation, or autopsy confirmation)	9
Duodenal ulcers (clinical diagnosis without confirmation)	5

The age- and sex-incidence is set out in Table IV.

ABLE IV.—*Age- and Sex-incidence of Chronic Ulcers*

Ages.	Under 20	21–30	31–40	41–50	51–60	61–70
ales	2	2	10	22	13	2
eaths	0	0	1	2	4	2
emales	1	5	5	5	2	3
eaths	0	0	0	0	1	1
otal	3	7	15	27	15	5
eaths	0	0	1	2	5	3

ACUTE AND CHRONIC ULCERS TOGETHER

The gross mortality from acute and chronic ulcers, 926–31, was as follows:—

Total cases, 111; deaths, 18; mortality, 16 per cent.
Males, 80; „ 14; „ 17·5 „
Females, 31; „ 4; „ 12·9 „

The corrected mortality, reached by exclusion of two deaths from perforation and one death from tuberculous meningitis, was as follows:—

Total cases, 111; deaths, 15; mortality, 13·5 per cent.
Males, 80; „ 12; „ 15 „
Females, 31; „ 3; „ 10 „

Severity of the hæmorrhage.—In Table V. the cases have been separated into those admitted in the first attack of hæmatemesis and those who gave a history of previous attacks; the classification, according to the severity of the bleeding, is somewhat arbitrary.

TABLE V.—*Severity of Hæmorrhage*

Severity of bleeding.	Cases.	
	First attack.	History of previous attack.
Fatal	17	2
Collapsed on admission ..	18	2
Severe	52	9
Moderate or slight ..	10	1

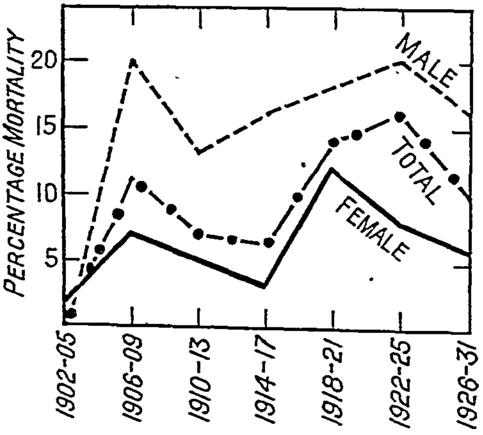
HÆMATEMESIS IN PEPTIC ULCER

The mortality from hæmatemesis in peptic ulcer (1902–31) may be summarised as follows:—

Total cases.—Of 578 cases, 66 died; excluding 3 deaths from perforation and 1 death from tuberculous meningitis, the mortality is 10·7 per cent.

240 males with 39 deaths—mortality, 16·2 per cent.
338 females „ 23 „ — „ 6·8 „
Acute cases—
257 cases with 25 deaths—mortality, 9·7 per cent.
101 males „ 17 „ — „ 16·8 „
156 females „ 8 „ — „ 5·1 „
Chronic cases—
321 cases with 37 deaths—mortality, 11·5 per cent.
139 males „ 22 „ — „ 15·7 „
182 females „ 15 „ — „ 8·2 „

The percentage mortality from hæmatemesis, 1902–31, is illustrated in the Figure.



Percentage mortality from hæmatemesis, 1902–31.

TREATMENT

It was not possible to account for a low or a high mortality by differences in treatment; the methods adopted appear to have been fairly constant at each stage, and did not differ from the treatment used at other centres. At the present time the treatment is morphine, a period of starvation with rectal salines, and later a graduated diet with alkalis. Blood transfusion has been frequently resorted to when the bleeding has persisted or other indications have presented themselves. Two cases were submitted to

MORTALITY FROM HÆMATEMESIS

A SUPPLEMENTARY ANALYSIS

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In 1927 I recorded[1] the mortality of all cases of hæmatemesis admitted to the medical wards of the General Hospital, Birmingham, between January, 1902, and July, 1926; the present investigation covered the period between August, 1926, and December, 1931. In both of these series every case admitted to the medical wards on account of hæmatemesis has been included, and in the present series three cases in which a hæmatemesis occurred soon after admission. Many cases who are admitted for the treatment of a peptic ulcer give a history of the vomiting of "coffee-grounds," or even of a small quantity of blood—these cases do not come within the scope of the inquiry; this point is an important one, and it is particularly to be noted that my results show the mortality of cases for whom admission to hospital is sought, as medical emergencies, for the treatment of hæmatemesis as the leading, often the only, symptom.

A summary of the 1902–26 series is given in Table I.

TABLE I.—*Cases of Hæmatemesis, 1902–26*

Disease.	Cases.			Deaths.			P.M.'s.
	M.	F.	Total	M.	F.	Total	
Acute ulcers ..	71	147	218	13	6	19	15
Chronic ulcers ..	89	160	249	15	14	29	23
Total ulcers ..	160	307	467	28	20	48	38
Hepatic cirrhosis ..	..	..	25	..	..	8	7
Gastric cancer ..	..	..	7	..	..	6	4
Portal thrombosis ..	..	..	1	..	..	1	1
Melæna neonatorum	..	..	2	..	..	1	1
Doubtful cases ..	..	..	24	..	..	3	2
Total			526			67	53

The peptic ulcer group (1902–26) may be analysed as follows:—

Acute ulcers.—Of 218 cases, 19 died—excluding one death which was due to perforation and peritonitis the mortality was 8·3 per cent.; the males showed a mortality of 16·9 per cent.; females, 3·1 per cent.

Chronic ulcers.—Total mortality of 11·6 per cent.; males, 16·8 per cent.; females, 8·7 per cent.

Total ulcers.—Total mortality of 10·7 per cent.; males, 16·8 per cent.; females, 6·5 per cent.

A corresponding summary of the 1926–31 series is given in Table II.

TABLE II.—*Cases of Hæmatemesis, 1926–31*

Disease.	Cases.			Deaths.			P.M.'s.
	M.	F.	Total	M.	F.	Total	
Acute ulcers	30	9	39	5	2	7	7
Chronic ulcers	50	22	72	9	2	11	10
Total ulcers	80	31	111	14	4	18	17
Hepatic cirrhosis ..	..	..	5	..	..	4	3
Gastric cancer	..	..	3	..	..	3	3
Cirrhosis carcinomatosa	..	..	1	..	..	1	1
Doubtful cases ..	..	..	3	..	..	1	0
Total			123			27	24

ACUTE ULCERS, 1926–31

No attempt has been made to differentiate acute gastric from acute duodenal ulcers on clinical grounds, the evidence from the post-mortem room is included.

Mortality in acute ulcers.—There were 7 deaths in the 39 cases—a mortality of 18 per cent.; of 30 males, 7 died—a mortality of 16·6 per cent.; of the 9 females, 2 died—a mortality of 22·2 per cent.

Cause of death: hæmorrhage alone, 4 cases; secondary broncho-pneumonia, 1 case; hæmorrhage with unsuccessful surgical treatment for its arrest, 2 cases.

Site of ulceration: no autopsy, 1 case; duodenum, 2 cases; lesser curvature, middle, 3 cases; pyloric antrum near greater curvature, 1 case.

Notes on the cases treated surgically.—The difficulties of surgical treatment are sufficiently emphasised in the case notes:—

Boy, aged 17. Admitted Sept. 10th, 1931; died Sept. 17th. He gave a rather indefinite history of pain after food for three months; he was admitted on account of a profuse hæmatemesis, and treated by starvation, rectal salines, and morphine; as the bleeding persisted a blood transfusion was given, and the bleeding stopped It soon started again, and he was submitted to an operation. No ulcer could be identified externally, so the stomach was opened in the region of the pyloric antrum; a small area of thinned mucosa was found and invaginated. The bleeding persisted, and the patient died of it.

Post mortem.—Stomach: on the anterior surface there was an area of hæmorrhage covering the region of the exploratory incision, and the pyloric region had been sutured *but not in the region of the ulcer,* which was found only after searching very carefully on the anterior surface near the greater curvature; it could only have been found if the edges of the incision had been everted. There was no thickening, and it was impossible to palpate it from the outside or the inside, and by no means easy to find it at the autopsy. The ulcer was shallow, 1·2 by 0·8 c.cm., extending through the mucosa, and the central part extended into the submucosa, a small mass of fibrin covered two openings—the severed ends of a small artery.

Man, aged 49 years. Admitted Sept. 1st, 1931; died Sept. 5th. He gave a short history of dyspepsia, and was admitted after a profuse hæmatemesis; he rapidly got worse under the usual medical treatment, and was submitted to a laparotomy after a blood transfusion. The surgeon found a small thickened duodenal ulcer which he invaginated, but the patient died.

Post mortem.—Stomach: immediately beyond the pylorus there was a small and quite superficial acute duodenal ulcer extending down to the submucosa, a branch of the gastro-duodenal artery in its floor was eroded.

Age- and sex-incidence is set out in Table III.

TABLE III.—*Age- and Sex-incidence of Acute Ulcers*

Ages.	Under 20	21–30	31–40	41–50	51–60	61–70
Males	2	8	7	8	4	1
Deaths	1	0	1	2	1	0
Females	0	2	2	3	1	1
Deaths	0	0	2	0	0	0
Total	2	10	9	11	5	2
Deaths	1	0	3	2	1	0

CHRONIC ULCERS, 1926–31

Mortality.—Out of a total of 72 cases, 11 died—a mortality of 15·2 per cent. Of the 50 males, 9 died—a mortality of 18 per cent. Of the 22 females, 2 died—a mortality of 9 per cent.

Cause of death: hæmorrhage alone, 6 cases; cerebral thrombosis, 1 case; perforation, 2 cases; tuberculous meningitis, 1 case; hæmorrhage in a patient with chronic nephritis, 1 case. Some amplification is needed to justify the inclusion of one of these cases and the omission of three of them in arriving at the correct mortality from *hæmatemesis.*

Man, aged 49. Admitted July 8th, 1926; died July 15th He gave a history of gastric ulcer of five years' duration seriously considered. While I do not suggest that discriminate operative treatment should again be roduced in all cases of severe gastric hæmorrhage, s obvious from the above figures and post-mortem dings that in the group of cases presenting a 74 cent. mortality, operative interference in carefully ected cases might have improved the recovery-rate.

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[1] THE LANCET, 1927, ii., 168. An error crept into the summary of this paper—the mortality from acute gastric ulcers in females was given as 8·7 per cent. instead of 3·1 per cent.

My thanks are due to Prof. O. L. V. de Wesselow help and encouragement, and to the staff of St. omas's Hospital for allowing me to publish these ures.

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ITAMIN-A CONTENT OF THE LIVER IN PUERPERAL SEPSIS

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In the course of an investigation [1] [2] into the effect treatment of cases of puerperal sepsis with con- trated preparations of vitamin A, the vitamin-A ntent of the liver was determined in those cases ming to autopsy.

It soon became obvious that under these conditions e liver was often fairly rich in this vitamin, but casional very low values, in spite of the ingestion large quantities of the vitamin, gave a more finite interest to the work. In the absence of y detailed figures as to the vitamin-A content of e livers of normal individuals, it was, however, fficult to assess the significance of the findings. is obviously impossible to use healthy puerperal omen as a basis of comparison, but the investigations L. K. Wolff and T. Moore* provide some indication the vitamin-A reserves of the liver in normal people. vestigations previous to these had shown that wide riations in the vitamin-A content of the liver curred in disease, and the more recent work shows at similar variations also appear in the healthy. he general level of the vitamin-A reserves in health oes indicate, however, that such low values as were und in some puerperal cases of the present series ere abnormal.

Technique.—The vitamin-A content of the liver as determined by the antimony trichloride test the unsaponifiable fraction of the liver fat, the lue value being estimated in the Lovibond tinto- eter. The amount of vitamin A present is expressed the form of the blue unit used by Moore,[3] so that irect comparison with his findings is possible.

Cases Treated with Vitamin A

In Tables I. and II. the essential details in 20 cases f puerperal sepsis treated with vitamin A are given. he septicæmic and non-septicæmic cases are separated order to show that the vitamin-A reserves, where here was a general infection of the blood stream, ere not in general lower than where the infection as more localised.

The vitamin-A preparations given were an arachis oil olution of mammalian liver fat and a more concentrated unsaponifiable extract from another source of mammalian liver fat. The former preparation usually provided the bulk of the vitamin given. Both preparations were periodically tested by the antimony trichloride test. The figures given in the tables under the heading of "Amount of vitamin A ingested" are necessarily approximate, since they are based on a pharmaceutical dosage. The quantity of preparation given on the day of death is not included in the estimate. The total content of the liver in vitamin A was calculated, in those cases where the exact weight of the liver was not known, by assuming the weight of the liver to be 1700 g.

It will be noted that whilst those cases receiving the larger quantities of vitamin tended to show the greater degree of vitamin-A reserves in the liver, this relation is by no means absolute, and there are some very anomalous cases. Cases 2 and 6 (Table I.) are prominent in this respect, whilst the cases in Table II. are grossly irregular, the two cases which had received the greatest amounts of vitamin showing the least reserves. The most striking instance of this disparity between the amount of ingested vitamin and the amount found in the liver is Case 1 (Table II.), where, though 15,000,000 units were given, the whole liver contained roughly only 1000 units. Other examples of this failure of the liver to retain the ingested vitamin may easily be found.

In the whole 20 treated cases the average amount of vitamin A in the liver was only 15 per cent. of the average total amount taken by mouth—excluding the vitamin A in the general diet, which in many cases was considerable in amount. The actual amount of vitamin A retained by the liver must, however, have been much lower than this percentage figure would indicate, for it is very unlikely (vide values for untreated cases, Table IV.) that the liver was usually devoid of vitamin at the commencement of treatment. Assuming (vide infra) that 10 per cent. of the ingested vitamin is lost in the fæces, and that the average content of the liver was that of the group of untreated septic cases (Table IV.), the average amount of the absorbed vitamin retained by the liver is found to be 8 per cent.

In a few cases it seems possible that a much larger proportion of the vitamin was taken up by the liver. Prominent amongst these are Cases 7 (Table I.) and 6 (Table II.), but it may well be that in these instances the original content of the liver in vitamin A was relatively high *prior to the commencement* of treatment.

FATE OF THE INGESTED VITAMIN

It is thus obvious that either a large proportion of the vitamin preparation taken by mouth was not absorbed or, if absorbed, was rapidly excreted or destroyed. The question of absorption has not been fully investigated, but Rowntree[4] studied this question in children, using a biological technique for the estimation of vitamin A in the fæces, and came to the conclusion that absorption depended upon the absorption of fat. The loss of vitamin A in the fæces varied from 2 to 12 per cent., the largest loss occurring with the largest intake. The fæcal content of vitamin A was estimated in two cases of the present series, and the loss by this route estimated at about 5 per cent., but no particular attention was paid to this point at the time, for its significance was not then realised. Further work is in progress on the question of alimentary excretion of vitamin A in cases of sepsis, and the preliminary results do not indicate a very large loss in this way. Failure to absorb the vitamin is therefore not likely to account for anything but a relatively small fraction of the unrecovered vitamin in the puerperal cases.

There is little evidence that urinary excretion accounts for any significant loss. Experiments in dogs operation with fatal results; in one case gastric lavage was used and the patient recovered.

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* Dr. Moore's paper appeared in our last issue. Prof. Wolff's as published on Sept. 17th (p. 617).

COMMENT

I wish to make no comment on the figures in this paper; I was led to bring the 1902–26 series up to date in order to see whether the mortality had changed; but with a much smaller series it appears that the difference is not marked. In Birmingham over a period of 30 years the experience of one hospital suggests a mortality in hæmatemesis from peptic ulcer of about 10 per cent.—the death-rate among men being at least double that among women, and occurring at rather a later age-period.

Finally, I must express my thanks to the members of the honorary medical staff of the General Hospital, Birmingham, for allowing me to publish the cases.

MORTALITY OF SEVERE HÆMORRHAGE FROM PEPTIC ULCERS

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Peptic ulceration of the stomach is likely to be attended by several complications, each of which calls for urgent treatment if the patient's life is to be saved. It is not sufficiently recognised that, apart from perforation or occlusion of the pylorus by scar tissue, there is a very considerable proportion of cases in which persistent or gross hæmorrhage is the direct cause of death, and there appears to be no unanimity of opinion on the treatment of these patients. Hurst,[1] for instance, said at a discussion at the Royal Society of Medicine in 1924: "I believe that hæmorrhage from gastric and duodenal ulcers is far less often fatal than is generally supposed. I have never had a case under my care in which death resulted, although I have only once had to call in the aid of a surgeon to save the patient's life." He reaffirmed this in 1929.[2] Paterson,[3] at the same discussion, in dealing with collected statistics of London hospitals, found a mortality from hæmorrhage of 3·8 per cent. in 1343 medically treated peptic ulcers, and admitted a probable mortality of 11·8 per cent. in severe hæmorrhage. At the same time he stated that he had yet to see a death from hæmatemesis *from a gastric or duodenal ulcer.* On the other hand, Hinton [4] records a mortality of 20 per cent. in 52 cases of gross hæmorrhage at the Bellevue Hospital, New York; Ross [5] 58 per cent. in 45 cases treated medically in Melbourne; and Lynch [6] 12·9 per cent. in 31 cases of gross hæmorrhage under medical treatment. There are, therefore, considerable differences of opinion as to the mortality-rate from this complication of peptic ulcer.

I have analysed all the cases of peptic ulcer and its complications admitted to St. Thomas's Hospital during the period 1925–31 inclusive; these included simple gastric, duodenal, and jejunal ulcers, perforated ulcers, and pyloric obstruction from scarring. The mortality from all causes in proved peptic ulcers was 11·3 per cent. in 1410 males and 8·4 per cent. in 402 females, representing a total mortality of 10·8 per cent.

Admissions for gross hæmorrhage, requiring urgent attention owing to sudden loss of blood by hæmatemesis or by the bowel, numbered 137 males and 54 females; hæmorrhage was the predominant feature in each of these cases. The mortality in patients admitted for hæmorrhage was 27 per cent. in males and 15·6 per cent. in females—a total mortality of 25 per cent., equivalent to that of perforated ulcers in this group. All these cases of hæmorrhage were treated by medical means, including complete rest, rectal salines, and morphia; about one-quarter received alkalis by mouth; 15 cases were transfused. Various hæmostatics were used in a number of cases without any convincing results. Washing out of the stomach with ice-cold water, as advocated by Hurst,[1] was not, however, adopted in any case. In view of these figures it is impossible to regard the medical treatment employed as entirely satisfactory. When we come to consider the advisability of calling in the surgeon there is, in view of the patient's general condition, a natural hesitation. Exsanguinated patients, even when transfused on the table, are a bad operation risk.

INDICATIONS FOR SURGICAL TREATMENT

The question therefore arises: is there any indication of the type of case in which medical treatment is likely to fail? As far as my figures go, it is exceptional for a single hæmorrhage from a peptic ulcer to lead to death. The striking fact about the fatal cases is that in all of them the hæmorrhage continued or recurred after admission to hospital, in spite of medical treatment. When hæmorrhage was still continuing, or recommenced after 24 hours of treatment, it indicated that a bleeding point was present which could not readily be occluded by medical means.

Of the admissions for gross hæmorrhage, bleeding continued or recurred 24 hours after coming under treatment in 48 male and 14 female cases; of these, 38 males and 8 females died, a mortality of 74 per cent. Post-mortem examinations on 45 of these patients revealed that the common cause of repeated hæmorrhage was a partially eroded vessel of considerable size in the floor of an ulcer, the type of ulcer being callous in 30 cases and acute in 7 cases; multiple ulcers were present in the other cases. The site of the ulcer was in the stomach in 31 cases, in the duodenum in 8 cases, and at the pylorus in 6 cases. One case showed both a callous ulcer in the duodenum and an acute lesion, with bleeding, in the stomach; whilst in another the pathological examination *revealed no definite bleeding point,* death being attributed by the pathologist to gastrostaxis. Eleven of these cases were under 40 years of age, with 7 deaths; 40 were between 40 and 60, with 28 deaths; while 11 cases over 60 years were all fatal. Four cases were complicated by parotitis, 1 by pneumonia, and 2 by aortic aneurysm.

The duration of dyspeptic symptoms was very variable. The shortest history among the fatal cases was only three days, but many had a history of ten years or more. In some cases, where the history was of only a few weeks, the ulcer was reported by the pathologist to be of the chronic type, while in others with a long history the hæmorrhage appeared to have arisen from an acute superficial ulcer. In most cases the hæmorrhage continued for several days, and in one case there was continued bleeding *for one month before death; the shortest time* from the onset of hæmorrhage to the death of a patient was 48 hours. There was, therefore, ample time for surgical interference in all the fatal cases if it had been considered desirable.

In general, medical treatment should be given a fair trial in cases of severe gastric hæmorrhage, provided there is a reasonable chance of its success and valuable time is not lost, but there certainly seem to be cases in which surgical intervention should

TABLE I.—*Findings in Twelve Cases of Puerperal Septicæmia*

Age.	Gravida.	Type of blood infection.	Duration of illness (days).	Duration of treatment (days).	Amount vitamin A ingested (1000 b.u.).	Vitamin A in liver.		Percentage relation of b.u. ingested to total b.u. in liver.	Autopsy findings.
						b.u. per g.	Total b.u. in liver (1000 b.u.).		
42	3	*Strep. hæmolyticus.*	36	28	6092	1056	2059	34	Malignant endocarditis tricuspid valve. Uterine mucosa ulcerated.
33	3	Strep. (anaerobic). Tetrad cocci (anaerobic). Gram + bacillus.	27	23	4762	205	307	6	Pus in cave of Retzius. Septic thrombo-phlebitis in l. ovarian vein, l. renal vein, and inferior vena cava.
21	1	*Strep. hæm.*	28	21	4633	440	748	16	Septic infarcts r. lung. Very advanced fibrinous pericarditis. Breast abscess.
29	1	Strep. (anaerobic) *Bact. coli.* *Strep. fæcalis.*	31	20	4470	590	1003	22	Abscesses in broad ligament and uterine wall. Septic thrombo-phlebitis l. ovarian vein.
23	1	Staphylococcus.	12	11	2887	345	553	19	Malignant endocarditis tricuspid valve. Small abscess cavity in cervix. Abscess cavities in lungs.
24	1	*Bact. coli.*	8	7	1579	7	10	1	Small abscesses in uterine wall. Died of secondary hæmorrhage from uterus.
34	2	Mixed.	10	7	1201	539	916	76	Liver fat, high carotinoid content.
32	2	*Strep. hæm.*	6	4	995	66	112	11	General purulent peritonitis.
28	1	,, ,,	6	4	879	81	138	16	—
26	1	,, *viridans.*	10	5	858	26	44	5	Thrombo-phlebitis r. leg and all thoracic veins.
32	1	,, *hæm.*	10	3	493	62	105	21	General purulent peritonitis.
27	1	,, ,,	15	2	257	154	262	102	Malignant endocarditis tricuspid valve. Partial retention of placenta.

TABLE II.—*Findings in Eight Cases of Puerperal Sepsis. (Negative Blood Cultures)*

e.	Age.	Gravida.	Duration of illness (days).	Duration of treatment (days).	Amount vitamin A ingested (1000 b.u.).	Vitamin A in liver.		Percentage relation of b.u. ingested to total b.u. in liver.	Autopsy findings.
						b.u. per g.	Total b.u. in liver (1000 b.u.).		
	35	2	56	56	15,444	0·5	1	0	Thrombo-phlebitis arm and leg. Liver abscess; mesenteric abscess. Septic infarcts in lung. *Strep. hæm.* in blood. Fatty degeneration and necrosis of liver-fat content, 26 per cent.
	38	3	22	15	3,432	4	7	0	Thrombo-phlebitis uterine veins, common iliac, and inferior vena cava. W.R. + +. Liver: extensive cell necrosis of eclamptic type without hæmorrhage. Fat content, 10 per cent.
	28	1	31	17	2,911	88	150	5	Uterus septic. Thrombo-phlebitis ovarian veins and l. leg.
	26	3	25	10	1,923	88	150	8	Interior of uterus septic and gangrenous, small abscess at fundus. R. ovarian abscess. Spreading gas-forming infection of abdominal wall.
5	19	1	17	8	1,785	407	570	31	Patient icteric. Septic infarcts in lung. Pelvic cellulitis.
	23	1	6	5	1,051	757	1287	122	General purulent peritonitis (*Strep. hæm.*). Bilateral empyema and broncho-pneumonia.
7	24	3	8	4	686	0	0	0	Uterus septic. Septic thrombosis r. leg.
8	32	4	5	3	473	169	287	61	General purulent peritonitis (*Strep. hæm.*).

ABLE IV.—*Findings in Seven Cases of Puerperal Sepsis. (No Vitamin-A Treatment)*

	Age.	Gravida.	Duration of illness (days).	b.u. per g.	Total b.u. in liver (1000 b.u.).	Autopsy findings.
	28	2	—	387	658	Septicæmia (*Strep. hæm.*).
	24	1	2	277	471	,, ,, ,,
3	32	1	—	187	318	,, ,, ,,
	31	1	2	103	175	Uterine sepsis. Twins both dead. b.u. per g. liver (1) 79, (2) 34.
5	32	1	3	37	53	Antepartum accidental hæmorrhage. Acute nephritis.
6	28	1	5	33	56	Uterine sepsis.
7	26	2	22	14	24	Uterus septic. Thrombo-phlebitis of leg (r.) and pelvic veins.

TABLE V.—*Findings in Seven Non-septic Puerperal Cases*

Case.	b.u. per g.	Total b.u. in liver (1000 b.u.).	Autopsy findings.
1	651	920	Seven months' pregnant. Cæsarean section. Cirrhosis of liver of alcoholic type.
2	572	700	Acute yellow atrophy of liver.
3	156	265	Eclampsia.
4	99	190	Eclampsia. Necrotic hæmorrhagic areas in kidneys.
5	81	138	Bilateral cortical necrosis of kidneys.
6	24	41	Thirteenth pregnancy. Collapsed and died two days after labour. Multiple infarcts in both kidneys. Bilateral cortical necrosis of kidneys.
7	0	0	Eclampsia.

and men submitted to a diet very rich in vitamin A (*including large doses of cod-liver oil*), carried out by Cooper,[5] suggest that a little vitamin A may be found in the urine under these conditions, but Rowntree[4] found no evidence of alimentary vitaminuria in children, even when the diet was very rich in vitamin A.

It must be concluded therefore, that when very large amounts of vitamin A pass into the liver, the liver cell (at least in the septic cases which were examined) is unable to incorporate most of the vitamin before it is either destroyed in the liver or passes into the general circulation. In the blood stream it is probably rapidly oxidised, for there is now good evidence that relatively very small quantities of vitamin A are stored in organs other than the liver.

COMPARISON WITH EXPERIMENTAL RESULTS IN ANIMALS

This failure of the liver cell to take up rapidly large quantities of vitamin A is also to be observed in animals. In rats the liver content of vitamin A only rises in a gradual manner when amounts much in excess of its normal requirements are fed, and there is no sudden increase when extremely large amounts of the vitamin are fed. Even when the vitamin is given intravenously, the liver fails to retain much of the vitamin presented to it as the experimental details (typical of several similar experiments) given in Table III. illustrate.

TABLE III.—*Effect of Intravenous Inoculation of Vitamin A on the Liver Reserves of the Rabbit*

No. of rabbits.	b.u. injected (average).	Total b.u. in liver (average).
4 (healthy)	158,000	71,000
3 (severe general tuberculosis) ..	290,000	32,000
4 (healthy controls)	0	18,000

Injections of an emulsion of a vitamin-A liver concentrate were given over an average period of nine days in the healthy rabbits, and over a period of 55 days in the tuberculous animals. In the healthy rabbits about two-thirds of the injected vitamin was not found in the liver or body generally, whilst in the tuberculous rabbits the disparity was very marked, only about 5 per cent. (allowing for the control values) was recovered, which suggests either that the normal capacity of the liver cell to store the vitamin was injured by the infection (the liver itself was not infected), or less possibly that utilisation of the vitamin was much increased by the tuberculous infection.

Carotene, the precursor of vitamin A, was still more rapidly destroyed when given intravenously in the healthy rabbit, for less than 25 per cent. was recovered from the body 30 minutes after the injection.

In the human cases, of course, the interpretation of the results is complicated by the presence of a very severe infection, and there can be little doubt that the degenerated condition of the liver cells so commonly found in severe infections was responsible in varying degree for the marked inability of the liver to retain the vitamin.

I have found some experimental support for this view. When a group of rats were given huge doses of cod-liver oil for a period of over one year the liver content of vitamin A was found to reach high levels in many cases, but in some the content was relatively, and in a few actually low. The livers of the animals showing low reserves were always in an advanced state of fatty degeneration and infiltration, due to the toxic action of the excess cod-liver oil, and possibly, in some degree, to the tuberculous infection to which the rats were submitted.

Cases with Low Reserves of Vitamin A

In the whole series of 27 treated and untreated cases of puerperal sepsis (Tables I., II., and IV.) 8 had a vitamin-A content per g. of liver of less than 50 b.u. A striking fact is that 5 of these cases had received sufficient vitamin A by mouth to raise the liver content to high levels, provided it had been retained.

It is also to be noted, though in such a small number of cases the association may be accidental, that 5 of the 8 cases with low vitamin-A reserves had extensive septic thrombo-phlebitis. Only 2 out of the total 7 cases showing this complication in severe form gave a value of more than 50 b.u. per g. of liver, and even in these two exceptions the liver content was not high, particularly in view of the very large amounts of vitamin given by mouth. The significance of this latter point is more obvious when it is realised that in one exception (Case 2, Table I.), where the b.u. per g. were 205, this figure would have been 3228 if all the ingested vitamin had been retained, and in the other exception the figure would have been 1765 instead of the determined value of 88.

In two of the cases of thrombo-phlebitis associated with low vitamin-A reserves (1 and 2, Table II.) the liver was examined histologically, and in both cases there was extensive cell necrosis at the periphery of the lobule, together with marked fatty degeneration and infiltration, a condition which was particularly severe in one case (1). The complete failure of the liver to retain the vitamin, in this case, has been already noted.

That there may be some relation between extensive venous thrombosis and low vitamin-A reserves seems more possible in view of the findings of Moore, for in six cases noted in his series, three had livers completely devoid of vitamin A. Moreover, Wolff points out that the liver content was considerably below the average in seven cases of lung embolism occurring in his series.

A probable explanation of these findings is that the toxic or degenerated state of the liver cell due to the extensive infection of the systemic veins was responsible for its failure to retain the vitamin presented to it, so that the vitamin originally present was utilised by the body without the loss being rectified from the incoming supplies from the intestine. Another possibility is that the original vitamin-A content of the liver prior to the onset of disease was low, and this condition predisposed to venous infection and thrombosis. There seems, however, no obvious reason why vitamin-A deficiency should predispose particularly to this complication, but since one liver function was so disorganised the possibility that failure of some other liver function may be responsible for the onset or prolongation of a thrombosed condition of the large veins should be considered.

THE VITAMIN-A RESERVES IN PUERPERAL WOMEN

The findings in seven women who died of non-septic disease are given in Table V. The cases are too few to warrant analysis or comparison with the septic cases, but they are included as they show two instances of low vitamin-A reserves. In one, a case of eclampsia, the liver was devoid of vitamin A—possibly another instance of liver degeneration. The other is s noticed that in one case a small amount of gas ected into the pleural cavity might greatly upset physiological activity of the lung, whereas the ge amount of gas used in another case might seem have a passive action only, that of mechanical ssure. Later, we began to study and catalogue so-called accidents, and found that these extra- linary cases threw much light upon the physio- ical or pathological changes seen in ordinary rmal cases. We found that certain changes ok place in a small degree in ordinary A.P.T. ocedure, but to an extreme degree in cases ere a so-called accident happened. It was first ident that pressure therapy was not merely erapy by pressure, but that a physiological action followed the induction of A.P.T. in every se.

"ACCIDENTS" OF ARTIFICIAL PNEUMOTHORAX

The well-known accidents met with in the induction artificial pneumothorax are generally catalogued der the following headings.

1. *Pleural or pleuro-cardial reflex.*—A condition of ock, being a sequence of cause and effect. (In these ses the effect is altogether out of proportion to the parent cause.) In all cases of so-called pleural flex there is an immediate upset in the physiological ocesses in the lung as a tissue, together with the oduction of a disorder in the rhythm of respiration the lung as an organ. There may be an extreme ervous collapse and a sudden cardiac irregularity. ain may be present, but pulmonary œdema is ways produced.

2. *Gas embolism* was described in graphic phrase y C. Saugman at the International Congress of ledicine in London in 1913. Saugman pushed his eedle rather deep into the chest and the patient istantly died. Post mortem, Saugman found rupture f a bronchus and the vessel lying beside it, and gas ubbles in the vessels of the brain. In J. Crocket's ublished case death was not quite as sudden, and was ue, he thought, to an unfortunate "milking" of the ube of the apparatus by an assistant, which forced as into the chest before the needle-point was free in he pleural cavity. In all such cases there is shock, nd in most of the German cases published it is diffi- ult to decide whether death was due to shock or to mbolism.

3. *Dislocation of the mediastinum* follows the induc- ion of too large a quantity of gas into the pleural avity, thus producing an immediate dextra- or sinstra-cardia. Parry Morgan considers that puncture of the lung may cause a leakage of gas and add to the volume forced in from the gas cylinder. In such cases the compression of one lung may also compress the other lung and lessen the negative pull in that lung. The result of so interfering with the negative pressure, which is physiologically necessary, can be easily appreciated.

4. *Pulmonary œdema or congestion* occurs in all other accidents, but is mentioned separately because it often develops without any apparent sufficient cause, the lung being a vital organ and not a mechanical machine.

In the following examples, collected from a practice extending over 20 years, extraordinary cases are stressed because of the lessons they teach. Ordinary cases require less comment, but I am convinced that in all ordinary cases there is some upset in the lung tissues, and that the actions and interactions which follow are the main cause of improvement.

CASE RECORDS

CASE 1.—A girl of 19 years. Fragile in build, fine features. Mucous membranes pale and teeth small, in regular setting and free from decay; no enlargement of tonsils or glands of neck; hands long and thin; muscles small; joints capable of hyper-extension; hair abundant, lanular hair on forehead. Signs of activity both apices, but area of disease apparently limited. T.B. present in sputum. Heart small. Pulse quick. Night temperature above 100° F.

It was considered, after X ray and other examinations, that gross disease was limited in area but that there was miliary spread. It was decided to try A.P.T. for the right (the worse) lung. The result at first was good; symptoms and signs decreased and the general condition improved. The improvement was, however, transitory, and the treatment was discontinued for a time. When we tried later again to inflate the pleura, adhesions had formed, produced by the treatment, and we could no longer get gas into the pleura.

To-day we should treat such a case with gold, and if by A.P.T. we should use very small amounts of gas. This was a case of acute adolescent tuberculosis. The type has been previously described by me in THE LANCET (1910, ii., 1028).

CASE 2.—A woman of 35 with gross disease in both lungs. T.B. +. Febrile. Occasional attacks of auricular fibrillation. As this case was hopeless without treatment, it could not suffer from treatment. A.P.T. attempted on the right side. Very few adhesions found. Inflation was easy. Patient bore the treatment well. Symptoms declined and there was great improvement for 18 months. Patient got up and was able to take long walks. Then relapse and death.

Autopsy showed right lung completely collapsed. A small amount of pus and oil (she had had oleothorax as well as A.P.T.) found in right chest. Left lung grossly diseased.

Large inflations of gas had been used. This was one of my early cases (1914). If I attempted to treat such a case now I should use smaller inflations, should not attempt collapse, and should rely upon oleothorax rather than A.P.T., Phrenic avulsion might also have helped. Gold never does any good in such advanced cases.

CASE 3.—A case similar to the last but with more adhesions. As the needle was pushed in and before the gas taps were opened the patient complained of feeling "queer." No inflation was attempted. The operation was at once stopped. The patient did not complain of any abnormal feeling after she went to bed, but next day it was found that she had hemiplegia, which became more pronounced during the next few days. She died within a week.

No autopsy was allowed, but this was evidently a case of embolism, probably gas embolism, though from the tardy exhibition of symptoms of paralysis it was thought we might have mobilised a thrombus. Although the gas taps were not opened the tubes contained air, and this may have been aspirated into a punctured vessel.

CASE 4.—A man of *sturdy build* and an ex-soldier. Marked lung signs. A large cavity in each upper lobe. Symptoms few. Afebrile. Patient, whilst doing light work in the sanatorium garden, had a hæmoptysis. He was sent to bed and in ten days vomited 3 pints 8 ounces of blood (measured). A.P.T. seemed *inadvisable* in view of the bilateral signs, but as death seemed inevitable it was tried on the right (the worse) lung. The treatment was successful. Hæmoptysis stopped and the patient slowly gathered strength. A.P.T. was not continued. Six months later it was decided again to try A.P.T. systematically. As the needle entered the chest, patient said "I feel queer." He became unconscious and convulsed, his cardiac rate sank to 40, and respirations quickened. Auscultation showed the presence of acute œdema; Babinski's sign was + on both sides, more marked on one side than the other. Vigorous treatment, including artificial respiration, oxygen, and pituitrin, brought him round. A week later another attempt was made, and A.P.T. was induced very easily. Great general improvement followed (patient able to get about) until the other cavity began to enlarge and he died. It seemed from the autopsy that we might have attempted to limit or suppress the cavity on the left side.

This was an extreme case of pleural reflex; although from the symptoms during the attack it was impossible a case of bilateral cortical necrosis of the kidneys which is of interest, since in Wolff's series diseases of the kidney give a low average. It will be noted that two cases of disease of the liver (acute yellow atrophy and cirrhosis) show high vitamin-A reserves, which suggests that though the diseased cell may not be capable of taking up vitamin A, it may retain much or all of that present before the onset of disease.

PUERPERAL SEPSIS AND LOW VITAMIN-A RESERVES

The present findings do not provide evidence on the question as to whether the vitamin-A reserves in puerperal sepsis are lower than in the normal puerperal woman. That they are probably lower than those of the average healthy individual appears from a comparison with the figures obtained by Moore in accident cases (Table VI.).

TABLE VI.—*Vitamin-A Content of Liver in Puerperal Women Compared with that of Normal Individual*

No. of cases.	Type of case.	b.u. per g. liver (*average*).
20	Puerperal sepsis (vitamin-A treatment).	261
13	Puerperal sepsis (no vitamin-A treatment).	122
9	Puerperal disease (non-septic).	203
23	Accidental death.	367

Since going to press data from 8 additional untreated cases have been obtained. These figures are included in Table VI. There were 4 cases of septicæmia which gave values of 10, 79, 13, 42 units per g. liver.

In the present series the average vitamin-A reserves in puerperal sepsis, even after large doses of vitamin A have been given, are seen to be definitely lower than those of presumably normal persons dying as a result of accident. Such a comparison is only suggestive, however, for on theoretical grounds it is likely that the normal liver during the puerperium is not so rich in vitamin A as it was prior to pregnancy. The fœtus must require vitamin A for its development and for building up its own reserves, the amount of which may not be insignificant, for Wolff finds an average of 73 b.u. per g. of liver in 24 new-born infants, and I have found an average of 57 units in 8 new-born infants. Wolff also finds a relatively low vitamin-A reserve in his puerperal cases (7 giving an average of 126 units). He also states that the blood of gravidæ and puerperæ is characterised by a very low amount of vitamin A in the serum.

Comparison of a larger series of septic and non-septic puerperal cases (neither group treated with vitamin A) should throw some light on the relation between low vitamin-A reserves and puerperal sepsis. Such an investigation is in progress.

Discussion

Such vitamin-A values as were found in puerperal sepsis are not in general high when compared with those of men and animals fed on good diets without special supplements of vitamin A. Under these conditions the author has found values ranging from 360 to 1100 b.u. per g. in cattle, from 110 to 700 in rabbits, and up to 14,000 in rats, whilst in man values in the region of 2000 are not uncommon. The liver reserves found under ordinary feeding conditions are far from representing the maximum capacity of the liver to store the vitamin, for in a case of pernicious anæmia in man, treated with liver, 10,500 b.u. per g. were found, whilst in a dog which had received cod-liver oil for several years the vitamin content of the liver rose to 58,000 b.u. per g.

The capacity of the liver to store vitamin A is thus far greater than its normal content on the average dietary of this country. There is at present no evidence that anything short of complete deficiency produces histological changes in the tissues. The findings of Green, Davis, Pindar, and Mellanby [6] in puerperal women do suggest, however, that though the liver may not be devoid of vitamin A the administration of extra amounts of this vitamin may increase the resistance to infection. If, as Wolff finds, the vitamin-A content of the blood is very low in puerperal women, it supports the hypothesis that a certain concentration of the vitamin in the liver is necessary before the blood can take up optimal amounts of vitamin A. A low concentration in the blood may cause weakening of some defensive mechanism against infection Observations on the blood content of vitamin A in health and disease should throw some light on this point.

Summary

1. The vitamin-A content of the liver has been determined by the antimony trichloride test in 20 cases of puerperal sepsis treated with large doses of vitamin A, and in 14 morbid puerperal cases untreated with the vitamin.

2. A large proportion of the vitamin taken by mouth was not found in the liver, and was apparently rapidly destroyed in the body.

3. Low vitamin-A reserves were found in several cases in spite of intensive treatment. In such cases septic thrombo-phlebitis was a frequent complication.

4. It is suggested that in degenerated conditions of the liver the liver cell is unable to retain the vitamin.

5. In two cases the liver was completely devoid of vitamin, according to the colorimetric test, but there were no clinical signs of vitamin-A deficiency during life.

Grateful acknowledgments are due to Dr. L. Colebrook, Dr. J. Joe, and Dr. F. Kirk for collecting the livers used in this investigation; to Prof. E. Mellanby for advice and criticism; and to Prof. L. K. Wolff and Dr. T. Moore for the privilege of seeing their results before publication.

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TWENTY YEARS' EXPERIENCE OF ARTIFICIAL PNEUMOTHORAX

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TWENTY years ago artificial pneumothorax (A.P.T.) was one of the Cinderellas of therapeutics. Even now the activities that it initiates are not clearly understood—at least not by the writer.

For years we thought it acted entirely by limiting respiratory function, putting the lung out of action as a splint stays the movement of a limb. Then it ra in too large a quantity. causing extreme ress, and danger has followed from dislocation of mediastinum. Here it is necessary to deflate at e.

pontaneous pneumothorax, not tuberculous in gin, is no uncommon occurrence. One patient, was sent to me by Dr. Durward Brown, of rrogate, whilst playing tennis felt a sudden pain in side, and X rays showed complete compression ne lung by gas. Such cases often do well without erference, but the prognosis is very different when patient has a gross tuberculous lesion. In these es deflation may be instantly called for.

ibrosis following A.P.T. affects both healthy and eased lung tissues. Pleuro-pericardial adhesions common. When disease is in both lungs and atment is attempted on both sides, the amount of used on the second side should always be limited that quantity which will limit disease activity. e's object is to stimulate sufficient but limit excess fibrosis.

OTHER CONDITIONS

When classifying the type of case's sent to hospital A.P.T., one notes the absence of patients suffering m a combined infection of joint and lung disease, ilst tubercle of the testes and of the ovary has peared quite frequently associated with cavities the lung.

N ALLERGIC SKIN REACTION AFTER SCARLET FEVER

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The possible appearance of a condition of allergy r hypersensitiveness to the intracellular products of æmolytic streptococci has recently been suggested y a number of workers. Mackenzie and Hanger,[1] sing filtrates and nucleoprotein extracts from a umber of pathogenic organisms, including the æmolytic streptococcus, carried out intradermal ests on healthy individuals and patients suffering rom a variety of diseases. They suggested that a roportion of adults are allergic to products of one or nore organisms, but were unable to correlate the esults of the skin reactions with pre-existing infections n the subjects tested. Irvine-Jones [2] found that a high proportion of rheumatic cases gave a positive skin reaction to filtrates of four-day cultures of streptococci of all types. It should be noted that a filtrate of a culture incubated for such a period includes both diffusible exotoxin and the products of autolysis. The significance of skin reactions to a composite reagent of this nature is therefore difficult to interpret. Recently Coburn [3] has shown that patients suffering from acute rheumatism are often hypersensitive to nucleoproteins derived from the bodies of hæmolytic streptococci which have been freed from all extracellular toxic material. Collis,[4] observing a close association between throat infection with hæmolytic streptococci and cardiac relapse in children convalescent from acute rheumatism, was able to demonstrate a high degree of cutaneous hypersensitiveness to proteins of this organism in rheumatic cases.

The skin reaction which Coburn and Collis described was of the papular type, quite unlike the flat reaction of the Dick test. They have suggested that the rheumatic state results from a number of predisposing causes of which not the least important is an allergy to products liberated from foci of infection with hæmolytic streptococci.

The possibility of applying a skin test clinically to determine whether this factor is present in doubtful rheumatic cases is of special interest, and the present work was undertaken to discover whether a known streptococcal infection produced such an allergic state. Dick toxin and preparations containing the soluble intracellular products of two strains of hæmolytic streptococci have been used as reagents for carrying out intradermal tests on children suffering from scarlet fever. Each child was inoculated with the three test substances on admission to hospital and at weekly intervals throughout the illness.

METHODS

The Dick toxin used was the standard product issued by Burroughs Wellcome, Limited.

Extracts of streptococci were prepared as follows: The strains used were (1) S.S.1, a standard laboratory culture of a hæmolytic streptococcus originally isolated from a case of scarlatina and known to produce a potent Dick toxin; (2) N.S., a strain recently isolated from the throat of a child suffering from subacute rheumatism. This strain was chosen at random as being one from a non-scarlatinal source. The 24-hour growth from 100 c.cm. of phosphate broth (containing 0·2 per cent. glucose) was removed by centrifuging and washed twice in sterile normal saline. The sediment from the second washing was then transferred to a bacteriological ball-mill, dried and ground. The resulting powder, taken up in 10 c.cm. of sterile saline and centrifuged to remove bacterial debris, was the crude extract used in the tests. It is to be noted that no chemical treatment of the organisms was applied in its preparation. The dilution for skin testing was 1 : 100, which had been found by preliminary tests to be capable of producing distinct reactions without any evidence of primary toxicity such as might give "false positives."

All tests were intradermal in the volar aspect of the forearm, 0·2 c.cm. of the material being injected. Readings were made at 24, 36, and 48 hours. (The skin reactions to the bacterial extracts were found to be maximal after 36 hours.)

RESULTS

Twenty-eight cases were examined throughout the course of the disease and during convalescence. They could be divided into two groups according to the results, viz. :—

Group I (22 cases).—Those developing an allergic reaction which appeared during the second, third, or fourth week.

Group II (6 cases).—Those in which no allergic reaction was obtained or in which the reaction, if present on admission, did not show an increase after the disease.

The allergic reaction which developed was identical with that described by Mackenzie and Hanger, Coburn, and Collis.

Within 12 hours of injection of the diluted extract an area of redness appeared which increased in intensity to reach a maximum after 36 hours. The fully developed reaction consisted of a central dark red swollen area which attained in some cases a diameter of 20 mm. Surrounding this was a variable zone of erythema, paler in colour and usually clearly defined in its margin from the surrounding skin. In the stronger reactions a definite zone of pallor surrounded the whole area. In other cases this was absent and the margin faded imperceptibly into the unaffected skin. In the more marked reactions the centre of the inner œdematous zone was pale and almost necrotic in appearance, though the skin never broke down. Slight pain was occasioned on movement of the arm, and tenderness was a feature of all moderate and severe reactions. Fading was rapid after 36–48 hours, the peripheral zone disappearing

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* In receipt of a part-time grant from the Medical Research Council.

to exclude gas embolism, it should be noted that there was no subsequent paralysis.

CASE 5.—Similar physical signs to above. The right lung grossly affected, the left lung slightly affected. At the consultation we decided to attack the left lung because the disease in the left lung seemed active. A.P.T. was induced on the left. A fatal hæmoptysis occurred two days later, and we judged that this came from the more grossly diseased lung, and we also thought that interference with the left lung had caused the catastrophe in the right.

CASE 6.—A flying officer with apparently unilateral disease had a history of recurrent hæmoptysis. A large inflation produced considerable dyspnœa and cyanosis. All this quietened down and the patient seemed in good condition and ready in a week for another inflation. In principle the patient agreed to the repetition but delayed the act. In five weeks, a day before the A.P.T. was to be repeated, the patient had a fatal hæmoptysis.

CASE 7.—The patient had been known to me as one suffering from pulmonary tuberculosis for many years. A rather sudden onset of acute broncho-pneumonia sent him into hospital. He seemed in a most critical condition. High febrility. Rapid pulse. Some but not extreme dyspnœa. Slight cyanosis. Sputum excessive. Disease bilateral. T.B. + +. A.P.T. was induced in the worse lung with remarkable success. Patient was walking about in a month's time. This was in 1914, soon after I had introduced oleothorax to the profession as a new method of treatment. Oleothorax was used as well as A.P.T., a pint of oil being injected into the pleura.

The case was published in the *Edinburgh Medical Journal* (November, 1915), where fuller details are to be found. The patient died some years later from hæmoptysis.

CASE 8.—An army officer with a history of chronic pulmonary tuberculosis had an acute attack of broncho-pneumonia, somewhat similar to the last-mentioned case. He was treated in the same way and with the same success. Then an interlobar empyema developed and was treated by aspiration and oleothorax. Patient gained several stones in weight and was able to carry on an exacting employment, his main trouble being dyspnœa on exertion. He was subject to relapses, always associated with broncho-pneumonia, generally relieved by deep aspiration of pus. The question of phrenic avulsion and thoracoplasty was raised, and eventually phrenic avulsion was adopted with considerable success.

One can never tell when one has finished with such a case, and the fear of hæmoptysis is ever present.

CASE 9.—Very similar to the above. This patient, a man in easy circumstances, was treated by A.P.T. in 1913. Eighteen inductions were carried out. For ten years he remained in comparatively good health and able to manage his business. Then hæmoptysis. The disease was then in a fibrotic stage with dense adhesions on the left (the worse) side. A.P.T. and oleothorax carried out with difficulty owing to adhesions. Thoracoplasty advised by Dr. Vera Pearson, to whom I sent him. The patient, however, began to improve again, and I negatived thoracoplasty and advised phrenic avulsion. The patient was against additional procedure as he felt comparatively well. Acute fatal hæmoptysis occurred 15 years after the commencement of treatment.

CASE 10.—A patient, 16 years of age, with chronic bronchiectasis and massive fibrosis almost confined to the left lung. Very ill—sub-febrile, emaciated. Sputum very offensive. Hæmoptysis not great but recurrent. Thoracoplasty advised but rejected. A.P.T. and oleothorax attempted, and although there were many adhesions and complete compression was of course out of the question, several considerable inflations, followed by injections of oil in large quantities, produced a very remarkable result. Patient was kept under close observation and was subjected to small inflations about every three months. The treatment was then empirical rather than logical. The patient is now able to work; I am certain there is a danger of relapse.

Since this paper was written the relapse has come.

CASES 11 and 12.—Two similar cases, middle-aged men, with chronic fibrosis and bronchitis, sputum excessive. Basal bronchiectasis, chiefly on one side. T.B. were found in one, but not in the other.

Treated with oleothorax with great temporary benefit. (I always give A.P.T. first before injecting the oil.) Oleothorax most valuable in such chronic cases after A.P.T. has done its partial compression. (See report of International Congress of Medicine, 1913, in which oleothorax was suggested and two cases described—the first, I think, in modern medicine.) I think it is of value as an alternative to the more drastic thoracoplasty. In one patient acute pulmonary œdema followed the introducing of the needle and frightened me into not attempting further treatment, but in most cases the patient bears the treatment well.

Dr. N. Tattersall has recently told me of a case in which a successful pneumothorax was gradually becoming obliterated by pleural creep. He filled up the pleural cavity with gomenolised oil (1½ pints), and the patient remained in excellent health for 18 months. She then developed pneumonia, followed by an empyema on the treated side, which ruptured into the lung, and pus and oil were being coughed up before the presence of the empyema had been suspected. All the pus and oil have now been aspirated, and the case is improving on pleural lavage with 1 in 2000 acriflavine. Thoracoplasty will probably be required in this case to close the cavity, as the lung is tightly bound down by thick visceral pleura.

CASE 13.—Patient with acute lobar pneumonia which began in hospital where he was being treated with A.P.T. The A.P.T. was discontinued as it increased the dyspnœa and cyanosis.

CASE 14.—Patient with acute lobar pneumonia with hæmoptysis and T.B. negative. A.P.T. was done to check the considerable amount of bleeding. The treatment stopped the hæmoptysis and aborted the pneumonia. After the induction the patient, feeling comparatively well, went home. Relapse; death from pneumonia.

CASE 15.—A patient whose case was diagnosed by his doctor as one of pneumonic phthisis with T.B. in sputum, was removed by me to hospital and treated with A.P.T.

This was a case of acute lobar pneumonia, and I recognised that I had made a mistake in diagnosis. The T.B. in the sputum must have been from a small lesion and was independent of the acute illness from which the patient had suffered.

Several French writers have been impressed by the occurrence of broncho-pneumonia, together with tubercle, in patients admitted to hospital. They have found that rest in bed is generally the best method of treatment. I have read with great interest the cases of acute lobar pneumonia treated by A.P.T. (J. J. Coghlan, THE LANCET, 1932, i., 13).

CASE 16.—A patient, apparently suffering from unilateral pulmonary tuberculosis, was treated by A.P.T. Whilst undergoing treatment she began to have diarrhœa which could not be permanently arrested, though Dr. A. F. Hurst's extreme acid treatment was tried. The question arose whether or no the A.P.T. had stimulated the intestinal disease, hitherto latent. This gastro-intestinal disturbance, whether produced by treatment or independent of treatment, is a great bar to further treatment by A.P.T. In one case, a non-tuberculous abscess of the lung, persistent and distressing vomiting for some time followed a few inductions.

FIBROSIS

All our methods of treatment induce fibrosis, and this of course has its attendant dangers. Patients with fibrosis and intermittent dyspnœa, generally spoken of under the heading of asthma, should be left alone unless other conditions demand treatment. A.P.T., by inducing pulmonary œdema, may precipitate an "asthmatic attack." I have seen fibrosis in the lung apparently induce a similar condition outside the lung. In one case there was stiffness of the muscles of the neck simulating spinal disease, though careful examination and observation (X ray included) did not indicate any bone disease. Marked emphysema is always a contra-indication to A.P.T., especially in the middle-aged patient. I have seen many examples where the gas has been introduced into the naphylaxis. An anaphylactic state associated with rculating antibodies and passively transferable to nother animal may be induced by injection of acterial proteins, as with almost any other protein, ut this state is not comparable with the allergy esulting from infection with the same organism. hese observers have contrasted the hypersensitiveness ollowing "injection" with that resulting from "infection."

Dochez and Stevens,[7] in work on the induction of a "Dick-positive" state in animals, showed that two phases could be demonstrated. In the early stages of sensitisation, filtrates of hæmolytic streptococci produced a "flat" type of erythematous reaction, and this effect could be readily neutralised with a specific antiserum. No reaction followed injection of heated filtrate at this stage. Later the reaction was papular in type and no neutralisation with any serum was possible while the reacting substance in the filtrate was thermostable. It was also noted that the late papular type of reaction was less specific than the early one, equally good results being obtained with strains of hæmolytic streptococci from sources other than scarlet fever. In scarlet fever the Dick reaction has been thought to correspond with the first phase. The present work shows that while both the "Dick-positive" phase and the allergic phase are found at different times in the course of scarlet fever, the reagents necessary to elicit the reactions differ. The early flat reaction is produced by the diffusible products of the organism, as found in filtrates of young fluid cultures, while the later papular lesion is a response to material from the bacterial bodies freed from extracellular toxins.

The clinical significance of the development of this highly allergic state in the late stages of scarlet fever is difficult to assess. The products of the organism are apparently toxic to the skin of such an individual, in the same way as tuberculin is toxic to a tuberculous person. If, therefore, a persistent focus of infection were present in the throat in the later stages, reactive products might be liberated into the blood stream and produce late toxic effects. It may be that this process is concerned in the production of rheumatism and nephritis complicating scarlet fever, since these conditions frequently appear after the early toxic phase, as manifested by fever and rash, has subsided.

The results reported here have no direct bearing on the ætiology of acute rheumatism. Of many who acquire the specific hypersensitiveness as a result of scarlatina, few subsequently show evidence of the rheumatic syndrome. All that can be said in this connexion is that the papular reaction of allergic type following intradermal injection of products of a hæmolytic streptococcus cannot be regarded as specific for acute rheumatism. The question of the persistence of the allergic state is of obvious importance and requires further investigation.

SUMMARY

1. In a series of cases of scarlet fever weekly intracutaneous tests have been carried out with an extract prepared from cultures of hæmolytic streptococci representing the soluble intracellular products of the organisms freed from diffusible substances. The extract was diluted 1 : 100 for the test.

2. Twenty-eight cases were examined and in 22 the reaction, negative during the first week, developed and became strongly positive by the fourth week.

3. All cases over 7 years of age acquired the allergic reaction.

4. The possible fallacy, that the reaction noted in convalescence is simply a recrudescence of a pre-existing skin-sensitiveness temporarily inhibited during the fever, is discussed.

We wish to acknowledge the kindness of Dr. W. T. Benson in giving us access to his cases. We are also indebted to Prof. T. J. Mackie for his advice and help throughout the work.

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AN AID IN THE TREATMENT OF TOXÆMIA OF PREGNANCY

BY SAMUEL J. CAMERON, M.B., F.R.F.P.S. GLASG., F.C.O.G.

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DURING 1929 over 600 women in Great Britain died from eclampsia, and it is therefore probable that each year several thousand—who have had toxæmia without reaching a convulsive stage—suffer from prolonged ill-health, or are doomed to premature death, in consequence of the damage sustained by the kidneys with or without hepatic involvement. Dr. H. Thomson and myself, from observations made at the County of Lanark Hospital, Bellshill, and at the Royal Maternity Hospital, Glasgow, are convinced that this need no longer be so if the simple line of treatment recommended by us be adopted.

We are of opinion that calcium is the main custodian of hepatic efficiency during pregnancy, and also that the calcium content of the blood is low at that time and especially during the pre-eclamptic state. We also believe that there is an accompanying deficiency of alkali. Hence, for over a year and a half all cases of albuminuria of pregnancy in the outdoor and indoor departments of the Maternity Hospital at Bellshill have been treated with calcium, potassium citrate, and sodium bicarbonate, and the results have been so favourable that we consider a great advance has been made.

A. A. Osman and H. G. Close [1] in 1931 demonstrated in normal pregnancy that there is a decrease in the plasma bicarbonate, and that this state persists throughout gestation. On the other hand the water content of the blood and tissues is increased and becomes greater as the plasma bicarbonate diminishes. By treating cases of albuminuria of pregnancy with alkalis they found that the amount of albumin in the urine became less, although the œdema occasionally increased after the initial dose. Potassium citrate and sodium bicarbonate, grs. 50 of each, were given in 1½ oz. of water several times a day and the fluid was restricted to 4 pints in the 24 hours. Each day the dosage was increased. The patients were kept in bed and a full diet was allowed.

We are strongly of opinion that such cases should be treated with calcium as well as alkalis, and also that the maximum effect of the calcium is obtained within 12 hours, though traces of the inner papular lesion remained for some days. The allergic reaction thus differed from the Dick reaction in its rather later development after injection and in the presence of the swollen and tender dark red central area.

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[1] Proc. Roy. Soc. Med., 1931, xxiv. (Sect. Obst. and Gyn.), 49.

The group of cases developing such an allergic reaction could be subdivided by reference to the results of the Dick test (see Table I.). In 14 cases the Dick reaction showed the usual change from positive to negative. In 6 cases the initial Dick test was negative, though the clinical condition on admission and the subsequent course of the disease showed it to be true scarlet fever. In 2 cases the Dick test remained positive throughout. Table II. illustrates the actual readings made on a case in the group showing an initial positive Dick reaction with the late development of a reaction to the bacterial extract. The difference in degree of reaction with strain S.S.1 and strain N.S. respectively was noted throughout. The strain S.S.1 was the scarlatinal strain which had been maintained in culture for many years. When a freshly isolated scarlatinal strain (S.2) was substituted for S.S.1 the reactions were exactly equal to those obtained with strain N.S. (see Table III.). It may be that the hæmolytic streptococcus loses to some extent the reacting principle after prolonged artificial culture.

TABLE I

Twenty-two cases of scarlet fever showing development of allergy to streptococcus extract, grouped according to results of Dick tests.

Dick test.		Allergic reaction.		Cases.
On admission.	On discharge.	On admission.	On discharge.	
Positive.	Negative.	Negative.	Positive.	14
Negative.	,,	,,	,,	6
Positive.	Positive.	,,	,,	2

TABLE II

Example of results obtained in skin tests on an adult, aged 24, during scarlet fever.

Reagent used in skin test.	Weeks—			
	First.	Second.	Third.	Fourth.
Dick toxin	24 × 18	Nil.	Nil.	Nil.
"Dick control" ..	Nil.	,,	,,	,,
Extract S.S.1	,,	,,	5 × 5	10 × 12
,, N.S.	,,	,,	10 × 10	35 × 15

S.S.1 = Scarlatinal strain of hæmolytic streptococcus. N.S. = Hæmolytic streptococcus from source other than scarlet fever.

In this and the subsequent table the figures indicate diameters of skin reactions in mm.

TABLE III

Parallel tests using extracts of strains S.2 and N.S. Diameters of reactions obtained in convalescent scarlet fever cases.

Reagent used in skin test.	Cases—				
	1.	2.	3.	4.	5.
Extract S.2 ..	35 × 24	30 × 20	35 × 28	45 × 35	33 × 22
,, N.S...	38 × 24	30 × 20	34 × 28	42 × 30	32 × 22

Cases not developing an allergic reaction.—These cases numbered 6 of the 28 investigated. In 1 the reaction to streptococcus extracts was negative throughout. In the other 5 cases a faint rash was noted during the first week, and this persisted throughout, with no tendency to increase.

Influence of age on the reaction.—The number of cases examined is too small to provide adequate data from which to draw any conclusions as to the influence of age in the development of the allergic reaction. The ages varied from 1½ years to 24 years. It is noteworthy that all cases over the age of 7 years developed marked allergy. These numbered 13. Of the 15 cases of 7 years and under, 9 developed the allergic reaction and 6 did not.

This finding is of interest, since Mackenzie and Hanger [1] showed that in unselected normal children and adults the proportion of reactors to bacterial extracts of various bacteria increased with age, as also did the severity of the lesions produced. It is very uncommon to meet with a pseudo-reaction in the Schick test during childhood, but towards adolescence these reactions become more frequent. This is probably another example of the same phenomenon.

DISCUSSION

It appears from these results that in a proportion of cases infection with the hæmolytic streptococcus is capable of producing a condition of hypersensitiveness to intracellular products of this organism. This finding would bring streptococcal disease into line with a number of infections known to result in allergy to the specific antigen.

It might be objected, however, that these reactions were a manifestation of a pre-existing allergic state suppressed during the febrile stage of the illness and reappearing in convalescence. It must, of course, be noted that a similar reaction can be elicited in apparently normal persons who have not previously suffered from a recognisable streptococcal infection. Such reactions, however, occur in a minority of urban children during the age-period 6–15 years. This had been shown by Coburn in New York, Collis in London, and H. J. Gibson and D. Stewart (unpublished observations) in Edinburgh, where 35 per cent. of normal children have been found to react. The disappearance of such allergic reactions during periods of fever or extreme weakness from any cause has been reported by certain observers, this inhibition being quite non-specific (see Mackenzie and Hanger [1]).

The fact that in our work 75 per cent. of the cases and all over the age of 7 became hypersensitive in convalescence suggests that the positive skin reactions were directly due to the infection and did not result merely from a recrudescence of a temporarily suppressed reactive state. It should be noted that all cases with sharp pyrexia or evidence of marked toxæmia were excluded from our series owing to the routine administration of antitoxin. Thus only mild cases were investigated. It does not seem probable that such cases with only slight and transient systemic disturbance would lose their skin reactivity. Finally, as showing that fever does not necessarily inhibit the reaction, may be mentioned a case of scarlatinal arthritis in the third week of the disease with a temperature of 101·6° F. in which a lesion of diameter 75 × 35 mm. was produced. The evidence seems to suggest that the allergic condition, as shown by the cutaneous reaction during convalescence, had arisen de novo and had not existed in the patients before the disease commenced.

We do not propose to discuss at length the mechanism of these reactions. The work of Zinsser and his co-workers [5] [6] has shown that this "allergy of infection" is fundamentally different from re than a superficial one (cf. Case 2). The abscess y extend up behind the soft palate, and down as as the post-laryngeal region. It may coexist th a cervical swelling—i.e., apparent cervical enitis. Hence, where an adenitis is present in the per cervical region, the retropharyngeal region ould be examined for any signs of an abscess there ase 1).

The diagnosis is completed by palpation. The oistened finger is gently inserted into the pharynx d the swelling palpated. Fluctuation may be tected bimanually with any coexisting mass in e neck. The mass may be hard and yet pus be resent. In such a case it is prudent to aspirate the tropharyngeal swelling through the mouth with a ick-bore needle and syringe. In adults, a cocaine nd adrenaline spray to the throat is sufficient næsthetic. The hawking produced by introducing he needle into the tumour will often force pus into he syringe, without the aid of suction (Case 4). ccasionally a diagnosis of retropharyngeal abscess nay be made in infants with the direct laryngoscope Case 6). When persistent inflammatory signs and ymptoms occur after operation for tonsils and denoids, a retropharyngeal abscess must be borne n mind as a possible complication (Case 3).

ANTERIOR AND POSTERIOR QUINSY

Just as pus, collecting between the tonsil capsule and the anterior pillar, produces a quinsy—i.e., an anterior quinsy, which pushes the tonsil posteriorly—so pus may form towards the posterior aspect of the tonsil, pushing it forwards and producing a "posterior" quinsy. This collection is between the mucous membrane of the posterior pillar and that of the posterior pharyngeal wall, and inside the pharyngeal fibrous layer. It simulates a retropharyngeal abscess but is not so deeply situated and, of course, does not extend laterally into the cervical fascial planes. Case 5 is an example of confusion in diagnosis. Only when the pus is absolutely submucous, as detected on exploration, can the diagnosis of a posterior quinsy be made with certainty.

DRAINAGE OF AN ABSCESS

In big children or adults a general anæsthetic is advisable. Young children and infants require no anæsthetic. The child is immobilised by wrapping it in a blanket which pinions the arms to the side. The head is held by an assistant and extended over a sandbag under the shoulders. The Davis tonsil gag is introduced. The surgeon, using a head-lamp, is seated at the head of the table. A moistened captive gauze swab is packed into the nasopharynx. The mucous membrane is incised by making a longitudinal tear, with the points of a closed, long, single-toothed dissecting forceps, over the most prominent part of the swelling, just medial to the posterior pillar and (usually) half-way between the soft palate and the base of the tongue, in the operative field. The initial tear is about half an inch long. It is deepened by successive strokes until a dense whitish capsule, resembling the capsule of the tonsil, comes into view. This layer must be penetrated before pus is liberated. It is the fibrous investment of the pharynx surrounding its musculature.

A retropharyngeal abscess may arise ab initio in the retropharyngeal space and remain localised there without any external cervical manifestation of its presence (Case 2); or it may extend laterally to appear as a swelling at the angle of the jaw, under cover of the sternomastoid; or it may commence as a cervical adenitis and then extend medially behind the pharynx to appear there as a retropharyngeal abscess, in which case the collection may be adequately drained through a retropharyngeal incision (Case 1). The extension passes deep to the carotid sheath, and the points of the forceps may be plunged posterolaterally without endangering the vessels. The inexperienced may be hesitant about penetrating further, as the white capsule may be at some depth from the surface. In any case of real doubt the swelling should be aspirated with the needle and syringe, when the withdrawal of pus will embolden the operator to proceed with the exposure of the abscess. Pus is liberated as soon as this "capsular" stratum is traversed. The use of an automatic sucker is advised, if one is available. In any case, the pus is mopped away, and the original opening is made as long as possible by running the points of the forceps up and down so as to tear open the tissues covering the abscess in its entire length. This may extend from well above the soft palate to the arytenoids. A gloved finger is introduced into the abscess cavity to determine its extent, and a bimanual examination is made with a finger over the neck. Pressure on any cervical mass will empty its part of the abscess into the wound. No bare bone is palpable, and the finger will break down any adhesions or loculi in the cavity.

The liberated pus, often considerable in amount, is prevented from entering the trachea by the posture and the use of the Davis gag; and it is prevented from entering the nasopharynx by the preliminary plug in the post-nasal space. The bleeding usually ceases rapidly. The cavity and throat are mopped dry, the plug is removed, and the patient is put to bed, lying on the face as after a tonsil and adenoid operation. With this wide exposure, pocketing of pus is prevented and a second operation obviated.

CASE 1. *Retropharyngeal abscess, with swelling in the neck, receding on retropharyngeal drainage.*—A child, aged 6, had tonsillitis with cervical adenitis. The illness commenced with a temperature and epistaxis, for which no cause was obvious. The pyrexia persisted, and on the tenth day the adenitis was still present. The glands were hard, and no trace of fluctuation or softening could be detected. There was now visible a painless fullness behind the right posterior pillar, detectable as a vertical band. Under anæsthesia, as described above, the retropharyngeal mass was explored with forceps. The pus was evacuated and the prominent cervical swelling collapsed completely. An external incision was avoided, a point of some importance when the patient is a girl. A month later there was no trace of cervical adenitis. The throat was normal and the tonsils small.

CASE 2. *Retropharyngeal abscess, simulating an acute aural condition.*—A girl, aged 9, whose tonsils had been removed by me three years before, had an acute febrile illness, with a temperature up to 104° and with mild bilateral cervical adenitis at the angle of the jaw. The swellings subsided, but there was severe pain in the left ear and dysphagia. A rigor occurred. I saw the child on the third day of the ear symptoms. There was tenderness over the mastoid, exquisite at the angle of the jaw. There was no cervical swelling. The tympanic membrane was normal. Behind the posterior pillar was a red swelling, tender to palpation, pushing it forwards to form a bulge behind it. The abscess subsequently burst. It resembled an inflamed tonsil, inasmuch as it formed a bulge behind the pillar. As the anterior pillar had atrophied after the tonsillectomy, the simulation of a tonsil was complete. The severe pain referred to the ear, the mastoid tenderness, and the rigor, coupled with a long, swinging temperature, gave rise to the suspicion of an acute aural condition.

CASE 3. *Retropharyngeal abscess, a complication of the operation for tonsil and adenoids.*—Two weeks after guillotining of tonsils, a child was admitted pale and ill, with a temperature of 103°, a rigid neck, and slight adenitis on one side. Mucopus welled out from the post-nasal space. No foreign body—e.g., a retained swab—was present. For the next week the temperature remained raised; then the source of the pus was traced to a leaking centrally situated when given in combination with the alkalis. At the *Maternity Hospital, Bellshill, over 400 cases* of albuminuria of pregnancy have been treated in the indoor and dispensary departments since the closing months of 1930 with a mixture of calcium sodium lactate (grs. 7½), potassium citrate (grs. 40), and sodium bicarbonate (grs. 20). For ease of administration these medicaments are prepared by Parke, Davis and Co. for us in tablet form with a flavouring agent, and three or four tablets a day are prescribed. These tablets are very soluble. It is interesting to observe the fall which has taken place in the number of cases of eclampsia admitted to this hospital since this special treatment was instituted.

Year.	Cases.	Year.	Cases.
1926	27	1930	38
1927	19	1931	8
1928	24	1932	7
1929	22		

It is important to note that this treatment was started towards the close of 1930, and that all the cases admitted during 1931 and a part of 1932 had never been to one of the antenatal centres and had not received the special treatment. Therefore the women who were under treatment by calcium and the alkalis were immune to this complication of pregnancy. The treatment cannot be expected to cure cases which are suffering from a chronic renal lesion, for the kidney is already permanently damaged and lacks the pronounced permeability of the kidney during normal pregnancy or the pre-eclamptic state. For this reason this special treatment is contra-indicated in cases of chronic renal disease, since alkalosis may supervene, but we imagine that this risk has been exaggerated. In the pre-eclamptic state with abundant albumin in the urine we always administer the drugs intravenously as soon as the case comes under observation. For this purpose the sterile solution of calcium gluconate (Sandoz) is used by us. Each ampoule contains 10 c.cm. of the solution, and the contents of one ampoule is mixed with sterilised potassium citrate and sodium bicarbonate in about a pint of boiled water.

A sterile solution of potassium citrate and potassium bicarbonate can be obtained in ampoules from some of the large chemical manufacturers, and in hospital we keep the calcium and alkali solutions in separate ampoules so that pre-eclamptic cases can receive immediate treatment. Apparently potassium bicarbonate can be rendered sterile by repeatedly heating it to a temperature of 150° F. without disintegrating, but when we made our own preparations we mixed the calcium and alkaline solutions in the cold state before bringing them to blood heat for intravenous injection. We consider that by so doing the various ingredients are more likely to retain their individuality, although from a practical point of view this may be relatively unimportant as probably all that is necessary is to provide an alkaline medium wherein the calcium can exercise its function to the best advantage. Sometimes we inject the alkalis first and later the sterile calcium solution. The effect of intravenous medication in many instances is dramatic, and quotation of a case treated by us will serve as an example of what may occur.

A primigravida was admitted with œdema so extreme that the eyes were practically hidden, there was severe headache, and high blood pressure. The output of urine was small and it boiled so solid that in order to estimate the albumin present the urine had to be diluted. The reading was then found to be 17, and after intravenous injection it dropped in 24 hours to 6 and on the following day to 0·5. The œdema rapidly disappeared, the blood pressure fell, and the quantity of urine secreted quickly increased, and within a few days the patient, who was admitted in a pronounced state of toxæmia, was happy and *comfortable.*

After injection four tablets a day are taken orally by the patient, but the intravenous administration should be repeated if the albumin begins to increase in amount and the blood pressure rises. A temporary but pronounced improvement may be expected, but if any anxiety exists labour should be induced, and this can be done with comparative safety as the patient is no longer being overwhelmed by the murky waters of the pre-eclamptic state. If the calcium and alkali treatment were omitted many of these patients would probably develop convulsions during induction of labour.

The public health authorities of Glasgow and the County of Lanark are now using this form of treatment in all their antenatal centres and we advise that the administration of these drugs should be *started about the fourth month of pregnancy.* Not only may toxæmia be thus prevented, but the alkalinity of the urine which is produced may have an inhibitory influence on the activities of the *Bacillus coli communis* and diminish the incidence of pyelitis. Recently it has come to my knowledge that one of my colleagues at the Western Infirmary, Glasgow (Dr. J. A. W. McCluskie), always gives intravenous injection of calcium before using salvarsan in cases of syphilis, for as he finds it is a reliable preventive of acute yellow atrophy of the liver—a complication which is liable to arise if salvarsan alone be used. This circumstance is additional confirmation of the protective action of calcium in connexion with hepatic metabolism. We have obtained less satisfactory results in the pre-eclamptic state from the intramuscular injection of calcium and consequently we recommend intravenous administration.

SOME POINTS IN THE DIAGNOSIS AND TREATMENT OF THE
ACUTE RETROPHARYNGEAL ABSCESS

By N. Asherson, M.B., B.S. Lond., F.R.C.S. Eng.

ASSISTANT SURGEON TO THE CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL; SURGEON FOR DISEASES OF THE EAR NOSE, AND THROAT TO THE QUEEN'S HOSPITAL FOR CHILDREN

An acute retropharyngeal abscess presents behind the posterior pharyngeal wall, medial and posterior to the posterior faucial pillar, in the potential space between the prevertebral fascia and the fascia investing the pharynx. This chink extends laterally behind the carotid sheath and passes under the sternomastoid muscle towards its posterior border. It contains loose tissue which enables the pharyngeal wall to be raised easily and to a great extent away from the posterior vertebral support by any collection of pus.

For examination of the throat the patient faces directly forwards. If the head is deviated to one side, the transverse process of the upper cervical vertebra forms a prominence behind the posterior pillar, and so simulates a retropharyngeal abscess. This prominence may be very striking.

The abscess may thrust forward the posterior pillar and, where the tonsils have been previously removed, this bulge may simulate an inflamed tonsil. As the anterior faucial pillar invariably atrophies after tonsillectomy, the bulge described is, to the non-discriminating observer, behind a pillar (mistaken for the anterior pillar) and the resemblance may be re than a superficial one (cf. Case 2). The abscess y extend up behind the soft palate, and down as as the post-laryngeal region. It may coexist th a cervical swelling—i.e., apparent cervical enitis. Hence, where an adenitis is present in the per cervical region, the retropharyngeal region ould be examined for any signs of an abscess there ase 1).

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Just as pus, collecting between the tonsil capsule and the anterior pillar, produces a quinsy—i.e., an anterior quinsy, which pushes the tonsil posteriorly—so pus may form towards the posterior aspect of the tonsil, pushing it forwards and producing a "posterior" quinsy. This collection is between the mucous membrane of the posterior pillar and that of the posterior pharyngeal wall, and inside the pharyngeal fibrous layer. It simulates a retropharyngeal abscess but is not so deeply situated and, of course, does not extend laterally into the cervical fascial planes. Case 5 is an example of confusion in diagnosis. Only when the pus is absolutely submucous, as detected on exploration, can the diagnosis of a posterior quinsy be made with certainty.

DRAINAGE OF AN ABSCESS

In big children or adults a general anæsthetic is advisable. Young children and infants require no anæsthetic. The child is immobilised by wrapping it in a blanket which pinions the arms to the side. The head is held by an assistant and extended over a sandbag under the shoulders. The Davis tonsil gag is introduced. The surgeon, using a head-lamp, is seated at the head of the table. A moistened captive gauze swab is packed into the nasopharynx. The mucous membrane is incised by making a longitudinal tear, with the points of a closed, long, single-toothed dissecting forceps, over the most prominent part of the swelling, just medial to the posterior pillar and (usually) half-way between the soft palate and the base of the tongue, in the operative field. The initial tear is about half an inch long. It is deepened by successive strokes until a dense whitish capsule, resembling the capsule of the tonsil, comes into view. This layer must be penetrated before pus is liberated. It is the fibrous investment of the pharynx surrounding its musculature.

A retropharyngeal abscess may arise ab initio in the retropharyngeal space and remain localised there without any external cervical manifestation of its presence (Case 2); or it may extend laterally to appear as a swelling at the angle of the jaw, under cover of the sternomastoid; or it may commence as a cervical adenitis and then extend medially behind the pharynx to appear there as a retropharyngeal abscess, in which case the collection may be adequately drained through a retropharyngeal incision (Case 1). The extension passes deep to the carotid sheath, and the points of the forceps may be plunged posterolaterally without endangering the vessels. The inexperienced may be hesitant about penetrating further, as the white capsule may be at some depth from the surface. In any case of real doubt the swelling should be aspirated with the needle and syringe, when the withdrawal of pus will embolden the operator to proceed with the exposure of the abscess. Pus is liberated as soon as this "capsular" stratum is traversed. The use of an automatic sucker is advised, if one is available. In any case, the pus is mopped away, and the original opening is made as long as possible by running the points of the forceps up and down so as to tear open the tissues covering the abscess in its entire length. This may extend from well above the soft palate to the arytenoids. A gloved finger is introduced into the abscess cavity to determine its extent, and a bimanual examination is made with a finger over the neck. Pressure on any cervical mass will empty its part of the abscess into the wound. No bare bone is palpable, and the finger will break down any adhesions or loculi in the cavity.

The liberated pus, often considerable in amount, is prevented from entering the trachea by the posture and the use of the Davis gag; and it is prevented from entering the nasopharynx by the preliminary plug in the post-nasal space. The bleeding usually ceases rapidly. The cavity and throat are mopped dry, the plug is removed, and the patient is put to bed, lying on the face as after a tonsil and adenoid operation. With this wide exposure, pocketing of pus is prevented and a second operation obviated.

CASE 1. *Retropharyngeal abscess, with swelling in the neck, receding on retropharyngeal drainage.*—A child, aged 6, had tonsillitis with cervical adenitis. The illness commenced with a temperature and epistaxis, for which no cause was obvious. The pyrexia persisted, and on the tenth day the adenitis was still present. The glands were hard, and no trace of fluctuation or softening could be detected. There was now visible a painless fullness behind the right posterior pillar, detectable as a vertical band. Under anæsthesia, as described above, the retropharyngeal mass was explored with forceps. The pus was evacuated and the prominent cervical swelling collapsed completely. An external incision was avoided, a point of some importance when the patient is a girl. A month later there was no trace of cervical adenitis. The throat was normal and the tonsils small.

CASE 2. *Retropharyngeal abscess, simulating an acute aural condition.*—A girl, aged 9, whose tonsils had been removed by me three years before, had an acute febrile illness, with a temperature up to 104° and with mild bilateral cervical adenitis at the angle of the jaw. The swellings subsided, but there was severe pain in the left ear and dysphagia. A rigor occurred. I saw the child on the third day of the ear symptoms. There was tenderness over the mastoid, exquisite at the angle of the jaw. There was no cervical swelling. The tympanic membrane was normal. Behind the posterior pillar was a red swelling, tender to palpation, pushing it forwards to form a bulge behind it. The abscess subsequently burst. It resembled an inflamed tonsil, inasmuch as it formed a bulge behind the pillar. As the anterior pillar had atrophied after the tonsillectomy, the simulation of a tonsil was complete. The severe pain referred to the ear, the mastoid tenderness, and the rigor, coupled with a long, swinging temperature, gave rise to the suspicion of an acute aural condition.

CASE 3. *Retropharyngeal abscess, a complication of the operation for tonsil and adenoids.*—Two weeks after guillotining of tonsils, a child was admitted pale and ill, with a temperature of 103°, a rigid neck, and slight adenitis on one side. Mucopus welled out from the post-nasal space. No foreign body—e.g., a retained swab—was present. For the next week the temperature remained raised; then the source of the pus was traced to a leaking centrally situated when given in combination with the alkalis. At the Maternity Hospital, Bellshill, over 400 cases of albuminuria of pregnancy have been treated in the indoor and dispensary departments since the closing months of 1930 with a mixture of calcium sodium lactate (grs. 7½), potassium citrate (grs. 40), and sodium bicarbonate (grs. 20). For ease of administration these medicaments are prepared by Parke, Davis and Co. for us in tablet form with a flavouring agent, and three or four tablets a day are prescribed. These tablets are very soluble. It is interesting to observe the fall which has taken place in the number of cases of eclampsia admitted to this hospital since this special treatment was instituted.

Year.	Cases.	Year.	Cases.
1926 ……	27	1930 ……	38
1927 ……	19	1931 ……	8
1928 ……	24	1932 ……	7
1929 ……	22		

It is important to note that this treatment was started towards the close of 1930, and that all the cases admitted during 1931 and a part of 1932 had never been to one of the antenatal centres and had not received the special treatment. Therefore the women who were under treatment by calcium and the alkalis were immune to this complication of pregnancy. The treatment cannot be expected to cure cases which are suffering from a chronic renal lesion, for the kidney is already permanently damaged and lacks the pronounced permeability of the kidney during normal pregnancy or the pre-eclamptic state. For this reason this special treatment is contra-indicated in cases of chronic renal disease, since alkalosis may supervene, but we imagine that this risk has been exaggerated. In the pre-eclamptic state with abundant albumin in the urine we always *administer the drugs intravenously as soon as the* case comes under observation. For this purpose the sterile solution of calcium gluconate (Sandoz) is used by us. Each ampoule contains 10 c.cm. of the solution, and the contents of one ampoule is mixed with sterilised potassium citrate and sodium bicarbonate in about a pint of boiled water.

A sterile solution of potassium citrate and potassium bicarbonate can be obtained in ampoules from some of the large chemical manufacturers, *and in hospital* we keep the calcium and alkali solutions in separate ampoules so that pre-eclamptic cases can receive immediate treatment. Apparently potassium bicarbonate can be rendered sterile by repeatedly heating it to a temperature of 150° F. without disintegrating, but when we made our own preparations we mixed the calcium and alkaline solutions in the cold state before bringing them to blood heat for intravenous injection. *We consider that by so doing the various* ingredients are more likely to retain their individuality, although from a practical point of view this may be relatively unimportant as probably all that is necessary is to provide an alkaline medium wherein the calcium can exercise its function to the best advantage. Sometimes we inject the alkalis first and later the sterile calcium solution. The effect of intravenous medication in many instances is dramatic, and quotation of a case treated by us will serve as an example of what may occur.

A primigravida was admitted with œdema so extreme that the eyes were practically hidden, there was severe headache, and high blood pressure. The output of urine was small and it boiled so solid that in order to estimate the albumin present the urine had to be diluted. The reading was then found to be 17, and after intravenous injection it dropped in 24 hours to 6 and on the following day to 0·5. The œdema rapidly disappeared, the blood pressure fell, and the quantity of urine secreted quickly increased, and within a few days the patient, who was admitted in a pronounced state of toxæmia, was happy and comfortable.

After injection four tablets a day are taken orally *by the patient, but the intravenous* administration should be repeated if the albumin begins to increase in amount and the blood pressure rises. A temporary but pronounced improvement may be expected, but if any anxiety exists labour should be induced, and this can be done with comparative safety as the patient is no longer being overwhelmed by the murky waters of the pre-eclamptic state. If the calcium and alkali treatment were omitted many of these patients would probably develop convulsions during induction of labour.

The public health authorities of Glasgow and the County of Lanark are now using this form of treatment in *all their antenatal centres and* we advise that the administration of these drugs should be started about the fourth month of pregnancy. Not only may toxæmia be thus prevented, but the alkalinity of the urine which is produced may have an inhibitory influence on the activities of the *Bacillus coli communis* and diminish the incidence of pyelitis. Recently it has come to my knowledge that one of my colleagues at the Western Infirmary, Glasgow (Dr. J. A. W. McCluskie), always gives intravenous injection of calcium before using salvarsan in cases of syphilis, for as he finds *it is a reliable* preventive of acute yellow atrophy of the liver—a complication which is liable to arise if salvarsan *alone* be used. This circumstance is additional confirmation of the protective action of calcium in connexion with hepatic metabolism. We have obtained less satisfactory results in the pre-eclamptic state from the intramuscular injection of calcium and consequently we recommend intravenous administration.

SOME POINTS IN THE DIAGNOSIS AND TREATMENT OF THE ACUTE RETROPHARYNGEAL ABSCESS

By N. Asherson, M.B., B.S. Lond., F.R.C.S. Eng.

ASSISTANT SURGEON TO THE CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL; SURGEON FOR DISEASES OF THE EAR NOSE, AND THROAT TO THE QUEEN'S HOSPITAL FOR CHILDREN

An acute retropharyngeal abscess presents behind the posterior pharyngeal wall, medial and posterior to the posterior faucial pillar, in the potential space between the prevertebral fascia and the fascia investing the pharynx. This chink extends laterally behind the carotid sheath and passes under the sternomastoid muscle towards its posterior border. It contains loose tissue which enables the pharyngeal wall to be raised easily and to a great extent away from the posterior vertebral support by any collection of pus.

For examination of the throat the patient faces directly forwards. If the head is deviated to one side, the transverse process of the upper cervical vertebra forms a prominence behind the posterior pillar, and so simulates a retropharyngeal abscess. This prominence may be very striking.

The abscess may thrust forward the posterior pillar and, where the tonsils have been previously removed, this bulge may simulate an inflamed tonsil. As the anterior faucial pillar invariably atrophies after tonsillectomy, the bulge described is, to the non-discriminating observer, behind a pillar (mistaken for the anterior pillar) and the resemblance may be

Case 2.—A female, aged 28, had all her teeth extracted der ether anæsthesia on Feb. 13th, 1932. She became ry ill about March 1st, and on March 14th I was asked to e her by her medical attendant, who wrote: "She is, hink, suffering from acute pulmonary tuberculosis." Her mperature was 103·2°, and her pulse-rate 140 per minute, d an offensive smell was obvious on entering the room. he sputum was brown, blood-stained, and evil-smelling. hysical examination located an extensive lesion in the ght lower lobe, the signs being those of consolidation of ng tissues, with commencing softening. Examination the sputum at the Derby County Laboratory showed reptococci, pneumococci, *Micrococcus catarrhalis*, a large umber of fusiform bacilli and spirochætes, but no tubercle acilli.

The patient was moved to hospital, where the temperature radually fell and the condition improved under general reatment. N.A.B., 0·15 g., was given intravenously on arch 23rd; the patient refused a second injection. By arch 26th the temperature had dropped below 98·4°, and he pulse-rate was under 90 per minute. The sputum isappeared altogether, and none could be procured for a e-examination.

Case 3.—A male, aged 30, a cooper by trade, was referred to me by his panel doctor on March 1st, 1932, as possibly a case of pulmonary tuberculosis. He gave a history of an influenzal attack with bloody foul-smelling expectoration seven weeks previously. Patient stated that he had not been well for years. A sister had died of pulmonary tuberculosis some 12 years before. All the teeth of the upper jaw had been extracted under local anæsthesia three years previously. Pyorrhœa was present in the gums of the lower jaw. The pulse and temperature were normal. Physical examination of the chest suggested generalised pulmonary fibrosis, but the skiagram showed no definite lesions nor any "leafless tree" shadows. Examination of sputum was negative for tubercle bacilli, but showed streptococci pneumococci, Vincent's fusiform bacilli, and spirochætes. The patient continues under treatment.

Case 4.—A male, aged 59, a discharged soldier of the regular army, now a mill labourer, was referred to me on April 27th by his panel doctor as "suspected chronic phthisis." The patient complained of loss of weight, night sweats, and severe cough, without much expectoration. His temperature was 99°, and his pulse-rate 120. Loud rhonchi were present over both sides of chest, with moist râles towards the bases. He had lost many teeth; those that were left were carious, and the incisors were loose and embedded in pyorrhœic sockets. The sputum was negative for tubercle bacilli, but contained streptococci, pneumococci, and fusiform bacilli and spirochætes in large numbers.

A skiagram showed a generally hazy chest. The patient gave a history of gonorrhœa and buboes in India 35 years before, and a Wassermann reaction was positive on May 12th, 1932.

The county pathologist reports: "The spirochætes are indistinguishable from those usually associated with Vincent's angina. *Dark-ground illumination* failed to show any other variety." The patient was referred back to his own doctor for antisyphilitic treatment. He is already back at his work and has gained several pounds in weight.

COMMENT

It is to be noted that three of these four cases were referred to me as suspected pulmonary tuberculosis; one had actually been notified as tuberculous. There is, I fear, little doubt that in the past many so-called "T.B. minus" cases of tuberculosis were pulmonary infections of this type. Looking back over an experience of 14 years as a tuberculosis officer, this type of pulmonary disease now seems to stand out plainly enough to be recognised clinically. Dr. Smith writes: "After proper allowance is made for pleomorphism it is about as easy to pick out a case of this disease in the wards of a hospital as one of tuberculosis." The cavities of carious teeth, pyorrhœic tooth sockets and, according to Dr. Roodhouse Gloyne, the crypts of unhealthy *tonsils* seem to be the natural home of *B. fusiformis* and *Spirochæta vincenti*. The ecology has *not* been fully investigated, but the organisms appear to exist in symbiosis. Tunnicliff and Smith observed, however, that pure cultures of fusiform bacilli can develop into spirilla-like forms.[1]

In three of my cases wholesale removal of teeth had been undertaken for pyorrhœa and caries—in the two acute cases within a fortnight of the onset of the symptoms, in one chronic case three years previously. In the acute cases general ether anæsthesia was employed, and it seems reasonable to conclude that the infective material was aspirated into the bronchi during anæsthesia. The fourth case had a mouthful of septic dental stumps. Smith writes that the spirochætes are absolute anaerobes and disappear very quickly from the sputum when it is exposed to the air; consequently the examination should be made within 30 minutes after the material is expectorated. If, however, the sputum is bloody, the blood protects the spiral organisms, and they may be found even 10 or 12 hours later. In my four cases the sputum was forwarded by post to the Derbyshire county bacteriological laboratory, and a period of 18 to 24 hours elapsed between the expectoration and the examination. The stain used was dilute carbol-fuchsin, without heat. Smith emphasises the *necessity for* washing the sputum before examination, doubtless in order to safeguard against buccal contamination.

TREATMENT

Smith[1] and Scott Pinchin and Morlock[3] recommend treatment by arsenical preparations. In one of the acute cases reported here two intravenous injections of stabilarsan, 0·3 g. and 0·45 g., were given, and this treatment seemed to have had a specific curative effect. The other patient had recovered from the acute stage before an injection of 0·15 g. N.A.B. was given. Where a definite abscess can be localised and drained through the bronchoscope, direct injection of a suitable dose of the drug directly into the abscess cavity has been suggested, care being taken that none of the drug escapes into the trachea or bronchi, as it is intensely irritating. Syphilologists, however, warn us against such a practice, on the grounds that local inflammation and sloughing might occur and that arsenicals produce their action on the spirochæte indirectly, through the medium of a toxalbumin. If untreated, the condition appears to persist as a chronic purulent or bloody bronchitis with offensive expectoration and eventual formation of bronchiectatic cavities.

My thanks are due to the county bacteriologists, Dr. Sheila M. Ross and Mr. C. F. Peckham, for their help and suggestions, and to Drs. Sawdon and Drabble for their notes on the progress of their cases.

A CASE OF CHRONIC TETANY

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The case here recorded is of interest because the symptoms were such that for several years the diagnosis of a "functional" disorder was maintained.

The patient, a single woman aged 40, was admitted to the Maudsley Hospital from the out-patient retropharyngeal abscess which was visible when the tongue was depressed. The abscess was incised from above as far down as the arytenoids and recovery was rapid.

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[3] Pinchin, A. J. Scott, and Morlock, H. V.: Proc. Tuberc. Assoc., Tubercle, 1932, xiii., 374; and personal communications.

CASE 4. *Bilateral acute retropharyngeal abscess, simulating Hodgkin's disease.*—A male, aged 28, who had suffered from dysphagia for a few weeks, had a bilateral cervical swelling the size of a golf ball. At the angle of the jaw on each side was an enlarged gland, with one or two smaller satellite glands. The mass was firm, non-fluctuant, and free from tenderness. The posterior wall of the pharynx, medial to the left posterior pillar, was elevated by a globular mass, very hard and painless. The tonsils were small, septic, and embedded. The Wassermann reaction was negative. A record needle attached to a syringe was inserted into the pharyngeal swelling without any anæsthetic, and the aspiration revealed pus. The abscess was drained *via* the pharynx, and the entire cervical mass on that side subsided. A finger inserted through the pharyngeal opening entered the cervical mass. The glands on the other side subsided, but within three weeks another cervical swelling arose on the right side, forming a marked bulge occupying the masto-mandibular recess and reaching down as far as the angle of the jaw, where another discrete gland, the size of a walnut, was present. There was no tenderness and the patient was well. Behind and medial to the posterior pillar of this side was a swelling, free from tenderness, hard and covered by normal mucosa. At the end of a week it was in *statu quo*. In view of the previous abscess, a needle was inserted into the retropharyngeal mass and the patient gagged violently, with the result that the syringe attached to the needle filled with pus immediately, without any manœuvring. The blood count was 58,000 white cells. The abscess was incised via the pharynx.

In this case the diagnosis of suppuration was only possible after using the exploration needle and syringe. Clinically the swelling resembled a lymphadenoma, in view of the multiplicity, size, and physical signs of the glands. A section from the gland removed at the time of drainage eliminated this disease. Within 24 hours the white cell count was down to 12,000. After another cervical abscess, which was incised, convalescence was protracted but normal.

CASE 5. *A posterior "quinsy" simulating a retropharyngeal abscess.*—A female, aged 30, had a sore-throat and dysphagia for a few days, with pyrexia. The right tonsil was pushed forward by an inflammatory mass, apparently behind the posterior pillar. The anterior pillar was normal. A collection of submucous pus was evacuated. This cured the abscess, which was not deep to the fascial pharyngeal investment and therefore must be looked upon as a "posterior quinsy," in view of its proximity to the tonsil capsule and the fact that it was submucous.

The true acute retropharyngeal abscess is well behind the tonsil, and lies behind the posterior pillar, outside the fascial covering of the pharynx. It is not in juxtaposition with the tonsil capsule as is a quinsy.

CASE 6. *Retropharyngeal abscess in an infant simulating laryngeal diphtheria; diagnosis only made by direct laryngoscope.*—An infant was admitted gravely ill from infection, with a history of recent respiratory embarrassment. When she fell asleep the jaw fell back and respiration ceased. Holding the jaw forward
The condition was that observed
when, unless the jaw is held forw
and breathing is impossible. Tl
phenomenon was obscure. Laryngeal diphtheria was assumed and serum administered.

Direct laryngoscopy was made,* the infant being rolled in a blanket and its head drawn over the edge of the bed. A globular centrally situated swelling with its summit opposite the larynx, invisible with the ordinary tongue depressor, was observed. It was a retropharyngeal abscess, and the centrally placed eminence acted as a stopper to the larynx. With the onset of sleep the larynx fell back and was completely occluded by the swelling. The abscess was incised as described above, without an anæsthetic, the head being held by an assistant. The breathing was restored to normal and the child had its first sleep for days. Convalescence was uneventful.

SUMMARY

1. Cases of acute retropharyngeal abscess are recorded, and a distinction is drawn between this condition and a "posterior quinsy."

2. The use of an exploring syringe and the use of the direct laryngoscope as an aid to diagnosis are described.

3. A description is given of a tranquil method f incising and draining the abscess through th pharyngeal wall.

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* To minimise any chance of the observer having diphtheritic material coughed at him, I use a laryngoscope with a celluloid screen attachment made by the Medical Supply Association.

Clinical and Laboratory Notes

FOUR CASES OF FUSO-SPIROCHÆTAL DISEASE OF THE LUNGS

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THE literature of pulmonary fuso-spirochætal disease—i.e., the infection set up by the symbiotic organisms associated with Vincent's angina—is now very considerable. David T. Smith,[1] who had reported 14 cases in New York, reviewed the whole subject in 1928 and gave no less than 128 references. With the exception, however, of the cases published by Campbell and Dyas [2] in 1917, which appear to have occurred amongst Canadian troops in England, no British cases had been published up to 1928. In my latest copy (old editions accumulate in 30 years' professional life) of "Taylor's Medicine," the thirteenth edition, dated 1925, the condition is not mentioned. Recent work in the London chest hospitals has, however, demonstrated that the condition is a common one. The use of the bronchoscope, in particular, has greatly helped in clarifying our conceptions and in demonstrating the parts played by anaerobic organisms, often acting in symbiosis, in the causation of bronchial and pulmonary disease.

THE CASE RECORDS

The notes of four cases which I have met during the past three months in the north-west of Derbyshire may be of interest, if only in drawing some attention to a common pulmonary condition which is, I believe, frequently mistaken for tuberculosis, and may, for example, sometimes constitute the "infective" element in "infective silicosis":—

CASE 1.—A female, aged 42, had several teeth removed under light ether anæsthesia on Feb. 21st, 1932. On March 1st she called in her medical attendant as she had been feeling ill for two days; her temperature was 100° F., but she had no objective signs. Three days afterwards the temperature was 103·5°. On March 4th an irritating cough came on and the patient complained of an unpleasant taste in the mouth. On March 5th she coughed up a quantity o purulent offensive material. This expectoration becam copious in the following days, and the offensive smell becam obvious on entering the room.

I saw the patient in consultation with her medica attendant on March 9th. Physical examination failed t locate any definite abscess. Examination of the sputum at the Derby County Laboratory showed streptococci pneumococci, *Micrococcus tetragenus*, gram-negative bacilli and Vincent's fusiform bacillus with spirochætes, in larg numbers. I recommended postural drainage, creosot perles by the mouth, and, on the suggestion of Dr. S. M Ross, arsenical preparations intravenously.

Dr. G. Sawdon, the patient's medical attendant, report the subsequent course as follows: "Stabilarsan, 0·3 g. was given intravenously and some improvement wa obtained, but the condition was still maintained, wit paroxysmal attacks of coughing which were very exhausting and subsequent evacuation of foul-smelling pus which wa now dark anchovy coloured. On March 27th a furthe injection of 0·45 g. of stabilarsan was given intravenously By next day the cough and expectoration had ceased an the temperature was normal; the patient then made a uninterrupted recovery." No sputum is now available fo further examination.

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[1] Tubercle, 1928, ix., 420.

[2] Jour. Amer. Med. Assoc., 1917, lxviii., 1596, quoted b Smith (ref. 1).

REVIEWS AND NOTICES OF BOOKS

n Introduction to Analytical Psychotherapy

By T. A. Ross, M.D., F.R.C.P.E., M.R.C.P., Medical Director of the Cassel Hospital for Functional Nervous Disorders. London: Edward Arnold and Co. 1932. Pp. 203. *10s. 6d.*

In his preface Dr. Ross expresses a fear that the achings of Freud may become lost to our profession, e Freudians having given up the general physician unteachable. Yet he would surely agree that ny modern views about the psychoneuroses inevitably ear the mark of Freud's influence, even if acknowdgment may sometimes be lacking. It is true that sycho-analytical publications are rarely planned or the ordinary medical reader and that he cannot e expected to go to the fountain head and study or himself the development of Freud's work, ascinating as that is. In this book is a rich store of bservations designed both to develop psychonalytical theory—as Dr. Ross is compelled to see t—and to illustrate therapeutic methods. Dr. Ross udges theory in the light of his own experience nd his methods are the application of psychoanalytical knowledge rather than psycho-analysis proper; this attitude is indicated in the title of the book.

A survey of the views of Janet and Morton Prince, with a brief dismissal of Adler's contribution to psychopathology, leads on to a demonstration of the necessity of a theory of the unconscious, which conveniently sums up a mass of observations and has the same validity that is attached to other scientific conceptions. Things happen as if the unconscious exists and, says Dr. Ross, if it helps anyone the proviso "if indeed it exists" may be understood each time the expression is used. Chapters on dreams and sex problems, transference, fixation, and regression combine theory with practice, and a discussion of the dangers of analytic investigation puts them into their proper relation with the dangers attached to any other active medical or surgical procedure. The chapter on technique provides no cut-and-dried rules but a description of difficulties and pitfalls and the way to avoid them; it is useful not only to the would-be psychotherapist but to the physician whose aim is to obtain a true picture of the patient's troubles. The orthodox psycho-analyst will, perhaps, find in the brevity of the description of free association an explanation of Dr. Ross's failure to satisfy himself of the universality of certain contents of the unconscious, for their discovery is claimed to depend upon a painstaking use of this method. Opportunity for such criticism is bound to arise when a worker on this big subject only accepts what he himself finds; it does not lessen the value of the book which, with no glossing over of difficulties, fulfils in simple and straightforward fashion the promise of its title.

An Outline for Boys and Girls and their Parents

Edited by Naomi Mitchison. London: Victor Gollancz. 1932. Pp. 928. With 166 illustrations. 8s. 6d.

This is an attempt to set out the foundations of knowledge for the benefit primarily of children, but the writers have had their eyes also upon parents to whom resort for explanations or supplementary information may be had. The plan of the book is ingenious. In the first place the appeal is to the individual reader, and to him it is explained what he is in the chapters on physiology, biology, and chemistry. His place in the general scheme of things is then made clear by the chapters on chemistry again, on physics and on applied biology; and now, knowing his place on earth, he is invited to consider that earth as it was and is, and its position in cosmogony. Brief principles of astronomy follow. After the scientific section, which occupies the first third of the compendium, a group of writers attack the huge task of telling the story of civilisation from the primal great discoveries of mankind down to the present day, with considerations of future problems based upon ancient experience and its progressive developments. A series of chapters deal with the physical and social story, with the arrival of the family unit and its inclusion in larger groups, and with the rise of the national idea. Mesopotamia, Greece, Egypt, and Rome are shown to have played their assorted parts in the evolution of the world as we now know it, being influenced by various aspirations for good and ill, and the tenets of different religions. A chapter is devoted to the occurrences of the last 30 years, in which the Great War is discussed as a sequel to the national strifes engendered by material rivalries, when the plea for international activities, conducted upon settled plans, is advanced forcibly. This section closes with chapters on the machinery of society as exemplified by the practices of law and its relation to government, and by the power of money with its economic implications. A third section, the shortest, deals with the arts, and is designed to inculcate in the mind of the young reader their value in making life so much more worth living.

The scientific section is thoroughly well done. Within the limits of space prescribed, the knowledge of to-day is outlined accurately, what matters much being drawn with a firm hand, details irrelevant to an outline being duly omitted. The manner in which the difficult subject of physiology is dealt with by Prof. Winifred Cullis, in collaboration with Miss Evelyn Hewer, D.Sc., forms a sound example of the right way to introduce new lessons to young minds, and the same congratulations can be extended to Mr. John Pilley, D.Sc., who, however, expounds chemistry in a different manner. He draws no outline of the whole subject, but explains with great skill the fundamental structure upon which modern chemistry rests, giving the best brief account we remember to have read of the properties of matter, and of the researches which have led up to their discovery.

The value of the social section of the book is more open to debate, as the lessons which are inculcated here are dependent frequently upon opinions and not upon scientific results. The opinions, even when widely diverse fields of social evolution and organisation are under discussion, display great unity, and the treatment recommended for the ills under which society suffers is usually drastic, perhaps too drastic. The medical mind must hold that meddlesome medicine may prolong disease, and that remedies that would be of value in a later stage may be less than useless when applied prematurely. A passionate desire to do the best by the patient is not accepted scientifically as an apology for malpraxis. Two essays in this section stand out for their practical worth, that on law and government by Mr. G. R. Mitchison, and that on economics by Mr. Hugh Gaitskell. Mr.

department on Sept. 8th, 1931. She had come up that afternoon complaining of pains in her stomach and "drawing" of her arms and fingers, with consequent depression.

The family history was negative.

Past history.—She was the fifth of eight surviving children of a family in poor circumstances, but she never experienced actual want. Her early development was normal, but she became "weak in the legs" at the age of 4 and was considered delicate as a child. Nevertheless she was able to attend school regularly, though she only reached standard IV. She entered domestic service at the age of 15, and was a regular and steady worker until she gave up her last position shortly before the onset of the present illness. She was of a quiet, sensitive, and retiring disposition, with few interests, yet contented with her lot. She always tired easily, but her physical health was good and she was never in hospital. Her periods did not start until the age of 19. They were quite regular. She had some dysmenorrhœa when young. Her sexual life seemed devoid of interest or episode.

History of present illness.—She gave up work some five years before admission to look after her mother and sister who were ill. This preyed on her mind and at about the same time the symptoms developed. There was considerable variation in their severity, and she spent months at a time free from cramps or pain, but never felt fit enough to start work again.

The attacks from which she suffered had in general the following characteristics :—

About once a month, usually just before her periods, though occasionally in between them, she would suffer from a "squeezing" pain in the stomach to be followed by shivering and diarrhœa. This would last for several days and be a sign to all that an attack was due. Her fingers would then go "cold and black and start doubling up." These painful cramps would last two or three days and sometimes be accompanied by twitching of the face and in the region of the elbows. Sleep became difficult, and she would cry with pain. The cramps would then pass off rather suddenly leaving an ache.

She became run down, lacking in interest, low-spirited, and prone to weep easily. She also became very thin. Her condition was attributed both by herself and by her medical attendants to "nerves." The attack which brought her up to hospital was the worst she had experienced, and had started four or five days before admission. Her period was about due.

Condition on admission.—She was a pale, wan, thin, puny woman, looking older than her age. Her manner was quiet, resigned, and pleasant. She was a good witness, if allowance be made for her rather low intelligence and limited vocabulary. Her general physical condition was poor. Height 4 ft. 8 in., weight 6 st. 4 lb. Her hair was rather sparse and turning grey, her jaws edentulous. Her lungs, heart, and abdomen showed no abnormalities. Her arteries were not thickened. Blood pressure 110/75. She was very knock-kneed and showed well-marked bowing of the right tibia, such as results from rickets when a child.

Tetanic spasms.—She showed clearly the classical features of tetany. Her upper extremities were flexed at the elbows, wrists, and fingers, the tendon of palmaris longus standing out prominently. She was unable to extend the wrists or fingers and showed flexor jerkings, together with much pain and discomfort, when her blood pressure was taken. Chvostek's sign was present. There were no signs of affection of her lower extremities, except for some slight increase of the tendon reflexes. Spasms, when not actually present, could easily be produced by a few minutes over-breathing.

Special tests.—Urine normal. Blood count: very slight anæmia (circa 4,250,000 red cells per c.mm.). Wassermann reaction negative. Serum calcium 6·5 mg. per 100 c.cm. Plasma inorganic phosphorous 3·1 mg. per 100 c.cm. Fæces normal. X rays: evidence old rickets, especially right *tibia*, ? some rarefaction. Eyes (Mr. R. Foster Moore) fundi normal. Lenticular opacities present.

Progress.—Definite carpopedal spasms developed, and continued fairly frequently for ten days after admission. In the intervals they could easily be elicited by over-breathing, and Trousseau's and Chvostek's signs continued to be present. The serum calcium remained between 6·5 and 6·7 mg. per 100 c.cm. and inorganic phosphorus between 3·1 and 3·4 mg. Intravenous calcium chloride gave temporary relief. She was given lactate grs. 10 t.d.s. and lactose grs. 30 daily in milk on Sept. 25th. The spasms began to diminish rapidly in frequency and severity, and were absent after Sept. 29th. On that date the serum calcium was 8·8 mg. and the plasma phosphorus 3·4 mg. Phosphatase (Kay) 0·25. Good progress continued and on Oct. 5th, when her calcium was 8·6 and her phosphorus 3·7 mg., Trousseau's and Chvostek's signs were negative, and carpopedal spasms could no longer be produced by over-breathing. Despite the return of menstruation on Nov. 2nd, her calcium and phosphorus were respectively 10·5 and 3·25 mg. She was discharged on Nov. 5th, having gained a stone in weight and vastly improved in health and spirits.

After her discharge she attended the out-patient department periodically until about two months ago and has been keeping well. Her periods have been regular and unaccompanied by tetanic symptoms. She has had occasional slight aching of the hands and feelings of languor, not particularly associated with menstruation. She has continued with calcium lactate and lactose.

COMMENT

As psychiatrists, we feel some diffidence in reporting yet another case in which a definite physical disease had been overlooked and the erroneous diagnosis of a purely "functional" disorder maintained. The mistake is too commonly the other way round. It was comparatively easy to make the correct deductions when the patient was seen in actual tetanic spasm, but it appears that no physician had had this opportunity before. Yet it is possible that a little more psychiatric interest, the taking of a more detailed history and a more exact searching inquiry into all circumstances of the attacks, would have roused doubts, and led to the correct diagnosis at an earlier date. The readiness of the patient to accept a "nervous" origin for the complaint might in itself have afforded grounds for suspicion. As it was, the history of domestic worries coinciding with the onset appears to have been accepted too readily as supplying a satisfactory psychogenesis, so that further interest lapsed, though at one period the change in colour and local discomfort in her hands suggested the diagnosis of some vasomotor disorder allied to Raynaud's disease. Her complaint was certainly suggestive of such a condition.

Donald Hunter,[1] in his Goulstonian lectures for 1930, has reviewed the literature and summarised the knowledge at present available of disorders in calcium and phosphorus metabolism. Our case seems most closely allied to the so-called idiopathic steatorrhœas of adults, which is supposed to arise from a defect in the absorption in vitamin D. It has many features in common with one of the cases which he describes under this heading. Both had a small structure and poor physique, evidence of past rickets, loss of weight, bony rarefaction, lens opacities and low serum calcium, together with attacks of tetany. It is true that our case had no diarrhœa whilst in hospital, and the fæces were not abnormal. There was, however, a definite history of such symptoms. With such a history the diagnosis of steatorrhœa is the most probable, though a somewhat lower figure for inorganic phosphorus might have been expected.

As regards treatment, irradiated ergosterol and fat restriction were not tried, as the case did well on calcium lactate and lactose.

Our thanks are due to Dr. Edward Mapother, medical superintendent of the Maudsley Hospital, for permission to publish this case.

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[1] THE LANCET, 1930, i., 897, 917, 999.

-On the Occurrence of Clumps of Asbestosis Bodies in e Sputum of Asbestos Workers, by M. J. Stewart, . Tattersall, and A. C. Haddow (Leeds). When the ng begins to break up, asbestosis bodies are found the sputum in clumps which represent alveoli.—he Pathological Changes Produced in the Tissues by orrosive Sublimate, with Special Reference to the arly Phases of Cell Degeneration and to Changes in he Blood Fat, by R. F. Ogilvie (Edinburgh). In the iver, kidney, and heart muscle the mitochondria reak up into granules which diffuse throughout the ytoplasm and form the granules characteristic f cloudy swelling. There is an immediate and nexplained rise in the blood fat, followed by a fall nd a second rise.—The Red Cells in Microcytic Anæmia (Witts), by C. Price-Jones (London). The condition of the red cells before, during, and after cure by iron salts is described by the author's well-known methods. The differentiation of anæmic from orthochromic cells is particularly interesting, and the proportions of the two kinds are a good index of the state of the patient.—Ligation of the Common Bile-duct, by G. R. Cameron and C. L. Oakley (London). Early focal necroses are healed. There is a great proliferation of bile-ducts which surround, invade, and disorganise the lobules. A divided bile-duct may reunite. Full historical account and literature.—Some Observations on the Eosinophil Cell, by J. H. Biggart (Belfast). Tissue eosinophils are emigrated blood leucocytes which are, in adult life, found only in the bone-marrow. Local eosinophilia can be produced in guinea-pigs by the injection of proteins or peptones, but not by amino-acids.

ERRATUM.—The price of the book by Mr. Arthur G. Wells, entitled "The Discharging Ear," which was reviewed in THE LANCET last week, is 2s. 6d., and not as stated.

BRITISH MEDICAL ASSOCIATION

CENTENARY MEETING IN LONDON

(Concluded from p. 684)

SECTION OF DISEASES OF CHILDREN

Bronchiectasis

Prof. CHARLES MCNEIL (Edinburgh) said that with the introduction of intratracheal injections of lipiodol in 1922 a precise study of the morbid anatomy of bronchiectasis in the living subject became possible, and Findlay and Graham in Glasgow in 1927 showed radiographically different degrees and types of dilatation in children. Recently new methods of treatment by surgical procedure and bronchoscopic lavage had been attempted. The condition usually dated from an acute respiratory illness (often measles or whooping-cough) in early childhood. The cough persisted after the illness, and later became paroxysmal; bouts occurred especially on waking, and often ended in vomiting. Sputum might be copious or scanty; and in children was generally not fetid. Free hæmoptysis was uncommon in childhood, though recurrent hæmoptysis might occur in older patients. At times the cough might disappear entirely, but the child was subject to exacerbations of cough with pyrexia. The general health was surprisingly good. Physical signs were often less reliable than symptoms in diagnosis, but variability in the auscultation signs was significant. Prof. McNeil described and illustrated two types of bronchiectasis: unilateral bronchiectasis with massive fibrosis, the more benign type, and the commoner bilateral type. The milder cases of the bilateral type shaded off into chronic bronchitis with fibrous changes in the bronchial wall. His experience suggested that if children survived the first year or two after the condition developed the chance of survival through the rest of childhood was good, and an active working life was often possible. The condition might remain stationary over a number of years. Post-mortem room observations led Prof. McNeil to believe that the primary change in early bronchiectasis was an intense inflammation of the bronchi which destroyed their walls, rather than fibroid changes in the lung substance.

Medical treatment was only palliative, but the most effectual was daily postural drainage, the child lying prone for at least half an hour on a steep inclined plane. Possibly with improved technique for bronchoscopic lavage a real advance in treatment might be achieved. The same applied to radical surgical treatment, the results of which hitherto had not been encouraging.

Dr. J. H. THURSFIELD (London) held that bronchiectasis, as described by Laennec and as demonstrated by lipiodol, was an advanced stage of a common condition—namely, fibrosis of the lung—and he suggested that the term bronchiectasis should be dropped. In most cases in which fibrosis had occurred in the lung there was some dilatation of bronchioles, and where this was only slight and not demonstrable in radiograms recovery often occurred.

Dr. STANLEY GRAHAM (Glasgow) said that any explanation of the ætiological mechanism must take into account the shrinking of the affected side due to fibrosis which almost invariably occurred. He believed, like Dr. Thursfield, that bronchiectatic dilatation was the direct result of pulmonary fibrosis. Nearly all children with bronchiectasis were markedly under normal height, and their slow growth probably in part explained their fairly good nutrition. He agreed that postural drainage was in most cases the best available method of treatment.

He had had the opportunity of re-examining with lipiodol and X rays 14 children (out of his series of 23) after an interval of three to six years, and six were apparently either stationary or improved. Six others of the series had died.

Mr. J. E. H. ROBERTS (London) gave an account of bronchiectasis from the surgical aspect. The term was used to cover very different clinical entities, including a condition which was congenital in origin. Whether or not radical surgical treatment was eventually attempted, palliative measures must first be adopted to get the bronchial tree as dry as possible. Bronchoscopy might be helpful, since a stricture favouring stagnation of discharge might be removable and aspiration might produce more healthy bronchioles. Radical treatment involved either collapse of a lung and of its dilated bronchioles, or lobectomy. The disease must be unilateral for collapse to be employed. He had found it impossible to predict from clinical or radiographical examinations whether or not in an individual case a lung could be collapsed. He showed remarkably good results in certain cases following collapse of lung by artificial pneumothorax, phrenic avulsion, or by thoracoplasty. Lobectomy was a possible method of treatment when the condition affected only one lobe, but had had a mortality of about 50 per cent. Recently a new technique had been employed in Toronto, and 14 successful cases were reported. Mr. Roberts and his colleague Mr. Nelson had operated on two cases by the new method, and he felt that if the method fulfilled its promise lobectomy would be the operation of choice for this group of cases.

Dr. H. TUKE ASHBY (Manchester) agreed that

Mitchison's summary of our legal machinery and analysis of our pattern of government are made beautifully clear by application to a breach of the law that might be committed by anyone—say by any parent for whom the book is written. Mr. Gaitskell explains the controlling power and international flow of money, so that, for example, the meaning of the gold standard and the bank-rate, and the arguments for and against protection become comprehensible. Both the lawyer and the economist are dealing with facts, and by confining themselves to facts may disappoint the "forward-thinking parents and teachers" who, says a strident wrapper, want the book; ordinary parents and teachers will welcome the direct guidance given in difficult places, and may not regret the absence of vague directions to Utopia.

The book is well got up, modestly priced, and profusely illustrated. The labour expended by all concerned in its production should earn substantial reward.

L'occlusion intestinale

By PIERRE MOIROUD, Chirurgien des Hôpitaux de Marseille. Paris: Masson et Cie. Pp. 120. Fr.18.

THIS is an excellent little monograph, written with Gallic clarity and decision. Although the diagnosis of obstruction is well described, the chief object of the book is to give an account of and to evaluate the different methods of treatment; above all to emphasise the modern views which have led to chloride therapy. It can be warmly recommended.

Recent Work on Ptosis

(*Prolapse*) *of the Female Pelvic Viscera*. By E. HESKETH ROBERTS, F.R.C.S. Edin., Gynæcological Surgeon, St. John's Hospital, Lewisham. London: Dickson and Scudamore. Pp. 110. 9*s.* 6*d.*

THE ætiology of prolapse is a subject which periodically gives rise to warm discussion. The anatomy of the pelvic fascia and pelvic cellular tissue is difficult to understand and there is much dispute as to which structures are important in supporting the pelvic organs. Careful descriptions of original anatomical research are few, but recently Amreich has made a magnificent contribution in the new Peham-Amreich "Gynäkologische Operationslehre." Mr. Hesketh Roberts makes no reference to this work although it has attracted great attention. His small book hardly displays the critical estimate of scientific evidence which is to be expected in a modern work, though he has read widely and reviews usefully a great deal of the literature.

Traité de physiologie normale et pathologique

By Prof. G. H. ROGER and Prof. LEON BINET, in the Faculty of Medicine, Paris. Vol. VI. *Circulation.* By Six Collaborators. Paris: Masson et Cie. 1932. Pp. 589. Fr.90.

IN this part of Roger and Binet's treatise on physiology the embryology and anatomy of the heart are briefly described, and the hæmodynamics of the heart-chambers and the mechanism of production of the heart sounds are discussed. A fair account of our knowledge of the circulation through the coronary arteries is given, including a discussion of their innervation. Cardiac automatism and innervation are treated at length, the physiopathology of the heart rhythm is described, and a short section on the electrocardiogram is included. The arterial, venous, and capillary circulations are well set out, and recent work on their nervous and hormonal control is noted. The book is primarily written for physiologists, but the clinician will find it interesting and readable. The style is elegant, but the illustrations and general production do not reach a very high standard.

United States Army X Ray Manual

Authorised by the Surgeon-General of the Army. Second edition. Rewritten and edited by Lieut.-Colonel H. C. PILLSBURY, M.D. U.S.A. London: H. K. Lewis and Co., Ltd. 1932. Pp. 482. 25*s.*

THE first edition of this standard manual was published in 1920 and was the work of a number of collaborators who had gained experience of the needs of radiologists in the war. The result as an elementary treatise was entirely satisfactory. The second edition has been revised and rewritten by Lieut.-Colonel H. C. Pillsbury by direction of the Surgeon-General. It is clear that instructions have been given to restrict the size of the book so that it should be no larger than its predecessor. In this task the author has succeeded, but at a heavy cost, for the scope of radiology has expanded rapidly in the last 12 years. In spite of the omission of sections that were devoted to various obsolete methods of localisation and to X ray therapy, there is so much new material to be included that the author has been placed at a serious disadvantage in his attempt to cover the whole field of radio-diagnosis. Half the book is devoted to X ray physics, technique, and localisation, which leaves inadequate space for a summary of the vast subject. Colonel Pillsbury has followed standard lines and the limited space available has precluded discussion. He has, however, succeeded in including a considerable amount of reliable information and the book gives a useful outline on which to build up a sound general knowledge of radiology.

Journal of Pathology and Bacteriology

THE September number (Vol. XXXV., No. 5) contains the following papers: The Antigenic Properties of Different Fractions of Staphylococcus, by K. W. Goadby (London). The capacity to produce an antibody response gra[illegible] as the organisms are chemically [illegible] Precipitation of Diphtheria Toxoid by Metallic Salts and the Antigenic Value of the Precipitates so Formed, by Margaret Llewellyn Smith (London). Alum compounds of toxin or toxoid are known to be exceptionally good antigens. Other procedures are here tested and goods results were obtained with colloidal aluminium hydroxide, zirconyl chloride, and calcium phosphate.—The Rabbit as a Means of Distinguishing the Human from the Bovine Type of Tubercle Bacillus: the Lesions Caused in the Rabbit by Tubercle Bacilli of the Human Type, by L. Cobbett (Cambridge). Human tubercle bacilli injected into rabbits exceptionally cause either a transient generalised infection or severe progressive lesions.—The Production of Bacteriotropins for Hæmolytic Streptococci by Patients Infected with that Organism, by R. Hare (London). Opsonins for the homologous organisms develop during puerperal infections except in rapidly fatal cases.—The Post-embryonic Development of the Erythrocytes of the Albino Rat, by Christianna Smith (London). A precise quantitative study of the changes in the red cells in infancy. About the time of birth there is a considerable decrease in size and variability and the population of red cells is almost completely changed in the course of a few days.—Primary Round-celled Sarcoma of the Peritoneum, by T. F. Hewer (Khartoum). In a Sudanese of 40.—Tuberculosis of Systemic Arteries with Fatal Rupture: a Report of Two Cases, by H. L. Sheehan and R. Whitehead (Manchester). Of the subclavian and splenic arteries.

emotherapeutic research it was also necessary to ve a potential or reputed remedy, and it was tural that the work should at first have concerned self with substances which were already known to ert physiological or therapeutic action—i.e., with tural alkaloids or their derivatives. This country as doing little chemotherapeutic research considering ie importance of the subject.

The final and crucial test of a drug was its ffect on disease in man, and human experiental therapeutics would require the same rethought, skill, and coöperation as did experients undertaken in pursuit of other sciences. edical students ought to be taught therapeutics, ncluding practical therepeutic investigation, as horoughly as they were taught diagnosis or pathoogy. The experiences of the general practitioner, aken in the aggregate, would greatly assist the dvance of practical therapeutics. Teaching implied eachers; yet the University of Edinburgh was the nly teaching medical school in this country which had a whole-time chair of therapeutics. The problem of discarding useless remedies would remain as long as new remedies were thrust on the market by drug manufacturers who spent money on investigating new compounds, and had to recoup themselves by the profits on a new drug. A manufacturer could now submit a new drug for the consideration of the Therapeutic Trials Committee of the Medical Research Council, which committee was in a position to arrange for a thorough investigation of the therapeutic merits of the drug. If, as a result, drugs were not in future put on the market without reasonable evidence of their worth, the gain would be great. It would be an advantage to have one large hospital concentrating its main energies on therapeutic research and post-graduate instruction. Some organisation was wanted for sifting and promulgating the knowledge of therapeutics. Medical research was increasing, and new journals continued to appear. A man might spend a good part of a lifetime in reading the literature on quinine alone, and the difficulty of coping even with abstracted literature was becoming increasingly great. Prof. Gunn wondered whether it might not be feasible to establish in every country a bureau of pharmacology and therapeutics which would receive direct from publishers a copy of every paper and book dealing with these subjects. Perhaps it might be combined with laboratories for pharmacology and chemotherapy, a hospital for therapeutic research, and a bureau for sifting and promulgating advances in knowledge. There was an elaborate organisation, with a ministry, for the prevention of disease, but as yet no such organisation for its treatment.

Prof. V. E. HENDERSON agreed on the necessity for academic encouragement, but held that the difficulty was to find a pharmacologist able to teach therapeutics. The effects produced by drugs on experimental animals were often very different from the effects of therapeutic doses in man. Eighty per cent. of the diseases the ordinary practitioner saw were "minor complaints," and yet hardly any extensive investigations were being carried out on them. A physician had recently published a paper identifying 27 different varieties of dyspepsia, but when it came to treatment the differentiation made no difference. Team-work was very necessary in pharmacology. There was always difficulty in keeping patients in hospital long enough for extensive pharmacological experiments with adequate control periods. Inmates of asylums and gaols would be useful material when they suffered from diseases. No new remedy should be sold until it had been adequately tested out in a large institution.

THE SUGGESTION VALUE OF DRUGS

Dr. ROBERT HUTCHISON pointed out that therapeutics was not and perhaps never would be an exact science, nor were drugs the only therapeutic agent. Research in physics, chemistry, and biology, not directed to any therapeutic end, might yield results useful to medicine. One of the greatest necessities was a closer alliance between medicine and other branches of science; unfortunately the whole trend to-day was towards splitting-up and isolation. Intensive ad hoc investigation was not, he suggested, a very fruitful way of advancing therapeutics. He asked whether a drug was necessarily useless because it was inert in a normal animal under experimental conditions. A large part of the use of any drug was due to suggestion. Practising physicians most of the time were not dealing with organic disease. It was just as important to deal with the trivial things, largely of psychological origin, in which anything did good if the patient believed in it. It was not the action of sarsaparilla on the body that mattered, but its action on the mind as a vehicle of auto-suggestion. The only final test of a drug was its effect on patients, and there was room for much more investigation in this respect. The ordinary physician was not such a doddering dement as pharmacologists supposed; but he did find it difficult to regard his patient as the pharmacologist regarded his rat, and to make proper control "experiments." No hospital specially limited to therapeutics would overcome this difficulty, or that due to constitutional variations in patients and in epidemics. Therapeutics ought to be better taught—so ought all subjects in the curriculum—but the only way to effect this was to make it a subject in the final examination. The accumulation of knowledge was a subject urgently needing research; science was being drowned in its own excreta. The multiplication of laboratories and whole-time research workers was not desirable. It did not matter whether a drug was discovered in Germany, the Argentine, or Timbuctoo, so long as it was not kept secret.

Prof. E. MELLANBY protested at the suggestion that therapeutics was being drowned in its own excreta. The subject had made great advances; to cure a disease by a drug was as valuable as to cure it by suggestion. The present stage of medical advance was largely due to therapeutics—to the direct attack on disease. Successful treatment had often elucidated ætiology. In fact, therapeutics was so successful that it was tending to leave physiology behind. Clinical observations which did not lend themselves to experimental inquiry did not, however, advance. Pharmacology gave medicine an unprecedented control over disease and had broken down the absurd barriers between biology, physiology, physics, biochemistry, pathology, and medicine. Neither the physiologist nor the pathologist realised that therapeutics was revolutionising physiology and pathology. Either the pharmacologist must extend his province to include the science of the treatment of disease, becoming the liaison officer between the laboratory and the ward, or he must remain the handmaid of physiology. There must be some better communication between the laboratory and the hospital; not all doctors regarded the laboratory worker with suspicion. The pharmacologist should be in charge of beds. He could greatly reduce the drug bill. He used fewer and cheaper drugs than the practising clinician. He since bronchiectasis was rare in adult life children with this condition must either die early or make fair recoveries. He had followed up 27 cases: of 11 cases of the unilateral type only 4 were living, whereas of 16 of the bilateral type 11 were living and doing moderately well. Hence his figures suggested that the bilateral was the more benign type.

Dr. N. B. CAPON (Liverpool) was struck by two facts: (*a*) that the text-book description of bronchiectasis was the description of a terminal condition; (*b*) that this condition was found in hospital rather than in private practice. This suggested that the condition was often preventable. If cough, with or without chronic bronchitis, persisted after whooping-cough, measles, influenza, or pneumonia, or if there were fairly constant crepitations to be heard over one area of lung, great efforts should be made to provide for the child in poor circumstances the dietetic treatment and perhaps climatic change available for the child in better circumstances. He regarded as important measures designed to get good lung expansion after pneumonia or atelectasis. After pneumonia the sound lung should be partially immobilised and the child encouraged to take deep breaths several times daily. If the apparatus were available carbon dioxide inhalation could be employed.

Prof. ARMAND-DELILLE (Paris) described with lantern slides dilatation of the bronchioles occurring in cases of tuberculosis.

Dr. C. P. LAPAGE (Manchester) had analysed 40 cases. Most of these had begun at an early age—some under 4 months—and followed broncho-pneumonia; not many followed measles or whooping-cough. He pointed out the need of dealing with any infection of the upper air passages, whether in the tonsils or adenoids or the nasal sinuses.

Dr. E. FLETCHER (London) drew attention to the association between atelectasis or congenital malformation and the development of bronchiectasis.

Vitamins and Minerals in Diet

Dr. ALAN BROWN (Toronto) described work undertaken by himself and his colleagues at the Hospital for Sick Children, Toronto, on the rôle of vitamins and minerals in growth and resistance to disease. Most ordinary mixed diets, he said, would supply the minerals required by the human body, but the supply in the diet of calcium, iron, and iodine should not be left to chance. To provide a growing child with sufficient calcium (a 10-year-old child required about 1 g. daily) milk must be included in his diet, though leafy vegetables would supply part of the calcium requirement. On the other hand, both milk and cereal were deficient in iron, and this could be supplied in egg yolk, liver, spinach. Iodine deficiency was not a pressing problem in the British Isles. He showed the influence of mineral deficiency and of vitamin deficiency in retarding the growth and lowering the resistance of rats; a deficiency of any of the known vitamins excepting E resulted in loss of weight. For an adequate supply of vitamin D children were ordinarily dependent on the action of sunlight on the skin; but it must be remembered that for as much as five to six months in the year sunlight in this country probably had a low anti-rachitic potency. In an ordinary diet 30 to 60 per cent. consisted of cereals containing little vitamin, calcium, or iron. For this reason a specially prepared cereal mixture with additions—including a sufficiency of calcium, iron, vitamin A, B_1 and B_2, and D—had been used in his hospital for the last two years. A group of children receiving 2 oz. daily of this special mixture grew much more rapidly than did the contr group.

Dr. HELEN MACKAY (London) believed that improving the diet of children offered better prospects of increased health in childhood than almost any other line of approach open to the medical profession. By remedying known dietetic deficiencies resistance to disease could be greatly increased. From observations on infants and young children it was apparent that iron deficiency was very widespread; supply of extra iron to artificially fed babies greatly reduced the incidence of respiratory, gastro-intestinal, and other diseases due to micro-organisms. On the other hand, in a group of infants known to be suffering from vitamin-D deficiency there was increased susceptibility to respiratory infection, but not apparently to gastro-intestinal infections; this diminished resistance could not, however, with certainty be attributed to D deficiency alone, as the diets were not in other respects identical.

Osteomyelitis

A paper on the subject read by Mr. C. P. G. WAKELEY (London) showed the diminished incidence of osteomyelitis during recent years as a result, he believed, of the improved standard of living. He considered that trauma played no important part in its ætiology. Early drainage was essential in treatment. He discussed the surgical treatment of the condition, showing that if a case came to operation early enough the medullary cavity need not be opened. He showed radiographically the excellent result obtained in a case of advanced disease in which diaphysectomy of the tibia followed later by bone grafting had been carried out. His rule was to operate as early as possible on osteomyelitis of bones near the surface, whereas when dealing with early osteomyelitis of the femur he preferred to wait.

SECTION OF PHARMACOLOGY AND THERAPEUTICS

AT a meeting of this section the chair was taken in turn by Prof. R. STOCKMAN, Prof. A. J. CLARK, Prof. V. E. HENDERSON, Vice-Presidents, and Prof. J. A. GUNN, President. Prof. GUNN read a paper on the

Outlook of Research in Therapeutics

For convenience, he said, he would consider research in therapeutics from the three angles of experimental pharmacology, chemotherapy, and experimental therapeutics. Modern medicine had acquired an unwieldy heritage of drugs which had been first tested by direct observation of their effects on disease in man, and there had never yet been any deliberate and concerted plan to rid medicine of the incubus of spurious remedies. Pharmacological research was in many ways inseparable from physiology, but it could not be adequately treated as a mere apanage of physiology. The bulk of pharmacological research could never become specialised, and the pharmacologist must have a wide training in physiological technique, and must at the same time maintain a knowledge of the diseases in which his drugs were used. It would become less and less possible for a man to be both a physiologist and a pharmacologist.

The only possible way of determining the curative value of a drug was to determine its action on the complex of host plus parasite. The reason why the advance in the treatment of trypanosome infections had been so rapid was that they could readily be produced in small laboratory mammals, and their parasites were easily recognised in the blood, so that the course of the infection could be followed. For

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might not be a great clinician; he must take help from and give it to his colleagues. He should not take fees, his object being solely to discover and investigate. Nor should he devote time to teaching; the work of investigation was very difficult, while teaching was easy, and thus a temptation to the tired worker. The laboratory must come first; ideas from animal experiments could be tested on patients, but fundamental research could not be initiated on them.

Dr. J. H. BURN thought it was quite time that a physician emphasised the psychological importance of drugs, and suggested that a class of "psychological" drugs should be frankly recognised. It might be argued that the doctor must continue to believe in them, but at any rate the very expensive ones might be cut out. He agreed that therapeutics might replace pharmacology in the examination list; much of the present pharmacological teaching was useless. Many things in therapeutics could only be appreciated at the end of the course. A long training was needed before a man could tackle a research job properly, and this training could only be obtained by six or seven years in a laboratory. The progress of the last 25 years was astonishing, and much of it had come from clinical observation. Contact with patients suggested all sorts of things that never occurred to the laboratory worker.

Prof. F. L. PYMAN pleaded for more research in pharmacology, and for close coöperation between the research chemist and the pharmacologist; any promising chemical compound ought to be examined in the pharmacological laboratory from many points of view. A body similar to the Council of Pharmacy and Chemistry of the American Medical Association might be useful here; this body approved a drug before it could be advertised in the journal of the association.

Prof. A. J. CLARK said that he advised his students not to emphasise too much the element of suggestion, as the lusty chiropractor was often more successful than the qualified practitioner in this direction. Great as had been the advances, he wondered if they ought not to have been greater, comparing them, for instance, with the development of wireless, or even of antimalarial therapy in the last three years. Organised team-work on a large scale might detect fine differences between drugs and work up the efficiency of the drugs at our disposal.

Prof. F. R. FRASER defended the practice of requiring research professors to teach and sit on committees; this work widened their views. Help in interfering with disease came from all quarters, but in only a few diseases could real interference be effected as yet, and the pharmacologist could only help the patient to break the process himself. He gave some account of the work of the Therapeutic Trials Committee.

Prof. W. J. DILLING thought that no defence of the experimental method was necessary, and urged the section not to overlook the wealth of research material in municipal hospitals.

Prof. D. CAMPBELL said that researchers were born, not made, yet much could be done to improve them. They should have a sound training in physiological methods, and particularly on the way in which physiological and pathological processes could be modified by physical and chemical means. For this, laboratory training was not sufficient. There was at present very little opportunity for pharmacologists to do therapeutic research; perhaps because authorities did not care to entrust wards to men with no clinical training.

Prof. R. STOCKMAN thought that the general practitioner had brought the treatment of minor ailments almost to perfection and needed very few drugs. Prof. Stockman's attitude to drugs was that of Polonius: "Those friends thou hast, and their adoption tried, grapple them to thy soul with hoops of steel; but do not dull thy soul with entertainment of each new-hatch'd, unfledged comrade." Better training must begin with the student. Most, if not all, of his present text-books could advantageously be discarded; they gave very little real help in therapeutics. It would be good for the pharmacologist to be faced by the hard facts of disease. He must, however, be a man trained in chemistry; doctors, as a whole, were badly trained in the exact sciences.

Prof. GUNN briefly replied, defending the ad hoc experiment.

Dr. J. H. SHELDON read a paper on the

Effect of Copper and Manganese on the Therapeutic Action of Iron

He said that recent work had shown that various metals were widely distributed in human protoplasm. Copper was a universal and essential constituent. Without copper the body was unable to use iron, and manganese was necessary for reproduction. Pure iron could not cure iron-deficiency in rats, but when a little copper was added the anæmia was cured; nothing else would do instead. An obvious application lay in the nutritional anæmia of infants. The human baby seemed to need about 0·5 mg. of copper daily. Young tissues seemed to contain more copper than adult tissues. Copper probably played an important part in growth, and increased the demand for iron. It was therefore desirable to give larger doses of iron with copper. At birth there was a large reserve of copper in the liver; copper and iron were the only metals stored in the liver during fœtal life. The infant depended on this store to prevent nutritional anæmia during its milk-diet period; therefore the mother should be supplied with these metals during pregnancy. The copper content of the liver in eclampsia was very low indeed, and the administration of copper might prevent toxæmia. Human milk was richer in copper and iron than was cow's milk; the copper content of milk could not be increased by feeding the mother with copper. These conclusions could not at present be applied to adult hæmoglobin deficiency.

Manganese was chiefly concentrated in the liver, pancreas, kidneys, and suprarenals, and was found in the blood-serum. No variations had been found in conditions of disease. The liver of the new-born had no reserve store of it; the maximum attained was the normal adult level. Meconium contained a good deal of manganese. In rats lack of manganese had caused a failure of endocrine function, particularly of the reproductive processes. It played no part in the utilisation of iron. All the common preparations of iron contained manganese as an impurity.

Dr. J. F. WILKINSON said that manganese had no value in anæmias, and in most cases his experiments had shown no benefit to accrue from copper alone. These mixed treatments owed their results to the iron; iron alone in adequate doses gave as good results as anything, and only in rare cases could success be attained by smaller doses of iron supplemented with copper. Some patients on iron showed no change for two or three months and then improved suddenly; their use as controls thus vitiated experiments.

THE LANCET

LONDON: SATURDAY, OCTOBER 1, 1932

VITAMIN-A RESERVES IN THE HUMAN LIVER

A series of four contributions to the study of vitamin A in relation to experimental animals and to man have been published in our columns during the past three weeks, the concluding one, by Dr. H. N. Green, appearing in our present issue. The ground was cleared by the convincing demonstration given by L. J. Harris and his co-workers[1] confirming conclusions already reached by others that vitamin A has no relation to the general immunising processes of the body; the mistake of attributing to it some influence over these processes is still often made, even by informed persons. The only function performed by vitamin A, which can truly be called an anti-infective one, is the maintenance of the health of the mucous epithelium throughout the body; in vitamin-A deficiency that epithelium becomes keratinised, and its efficiency as a barrier against microbic infection is impaired. This process can be well observed in the rat, particularly when the deficiency is partial so that life is maintained for some time; the relation between deficiency of vitamin A and the keratinisation of the mucous epithelium, with consequent infection, is, in this animal, indisputable. The inference that in man the same process of epithelial deterioration takes place as a result of vitamin-A deficiency, and that a degree of partial deficiency is not infrequent among human beings, is still, however, unproven. The only evidence hitherto available that the reserves of vitamin A in a human population might be too low was provided by the fact that a certain number of cases of well-marked deficiency occurred, from which it was inferred that other cases of partial deficiency must also be present. In this country 17 cases of xerophthalmia and night blindness were seen in the course of one year at the ophthalmological department of a hospital in the North of England[2]; the possibility that a partial deficiency is quite widespread among the poorest classes must therefore be accepted.

The observations made by L. K. Wolff[3] in Holland and by T. Moore[4] and Green separately in this country now provide data of a more concrete nature. These workers have investigated by means of the antimony trichloride reaction the vitamin-A content of the liver of human beings who for various reasons have come to autopsy; in the series investigated by Green all the cases were puerperal. The liver is, as far as we know, the chief storehouse of this vitamin within the body, and its vitamin-A content should give a very good index of the reserves present in it. Such human material is exceedingly difficult to classify. The great variation in the values obtained, even for seemingly comparable individuals within a group, makes it necessary to collect a very large number of results before statistically reliable conclusions can be drawn. Even the observation that great variation exists has value, however, and many other important facts have been elicited. It is noteworthy that both Wolff and Moore found the highest values in the livers of diabetics; this is due to the preponderance in their special diet of vegetables containing carotene, the precursor of vitamin A. All other values were markedly below these diabetic ones. An obvious difficulty in such work is the collection of material from normal healthy individuals in order to obtain a normal standard of values. Moore had at his disposal material from 23 cases of accident or poisoning, and Wolff had a corresponding series of 78 cases; and though the values in each series showed fairly wide variation, the average values for the two series are substantially the same, and may be regarded as a standard for comparison.

The diseases in which Moore found that the vitamin-A reserves tended to be low were organic heart disease, non-tuberculous respiratory diseases (particularly bronchitis), organic kidney diseases, septicæmias, and certain septic conditions, but in many other infective conditions the reserves were regarded as adequate. He is therefore forced to the conclusion that the vitamin cannot be regarded as a positive anti-infective agent, indiscriminate in action, but that partial vitamin-A deficiency may be a factor in the ætiology of some types of infection under clinical conditions. Wolff reckons that about sixteen per cent. of the people of the Netherlands have inadequate vitamin-A reserves, and he adds the interesting observation that these reserves tended to be unduly low in the newly born. Green found that the vitamin-A reserves were low in most puerperal cases, and that they might remain low even after large amounts of vitamin A had been administered therapeutically. He gives reasons for believing that this is not due to lack of absorption of vitamin A when taken by the mouth, or to significant loss through urinary excretion, but rather to a failure on the part of the liver cells to incorporate the vitamin when it reaches them in large quantity before it is either destroyed or passes into the general circulation. A new method of approach is being opened by this work. The preliminary findings are suggestive, though, as the authors fully realise, much more relevant material will have to be collected before conclusions of statistical significance can be drawn.

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[1] The Lancet, Sept. 17th, p. 614.
[2] Arch. Dis. Child., 1931, vi., 17.
[3] The Lancet, Sept. 17th, p. 617.
[4] Ibid., Sept. 24th, p. 669.

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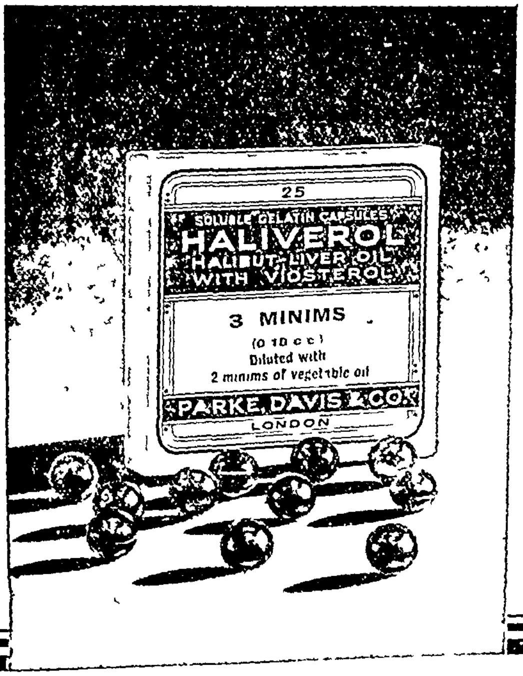

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The work is essentially a plea for a wider outlook pædiatrics since, in the committee's words, nfant hygiene cannot be reduced to purely ysical terms." Even the primary factors of ding, sleeping, exercise, rest, metabolism, are rms of "behaviour" and as such find an ultimate ference in personality and infant-parent relationip. The lesson is emphasised by the curious ntrast between the discussion of the problem mothercraft in two books which have recently en submitted to us for review. To take, for ample, the sections on weaning, in one[2] e dietary is laid down in detail, and emphasis laid on the need for gradual weaning the interests both of the mother and child; it no hint is given that the general upset hich may result from a sudden change is ot solely due to the ingestion of unaccustomed od on the one side or the painful engorgeent of the breast on the other, but has a eep psychological element. Sucking its mother's east undoubtedly gives the child pleasure, quite part from the fact that the breast is a urce of food; when such contact is denied e child feels aggrieved and needs extra mothering" and affectionate attention to enable to readjust its attitude to life. The ways in which is emotional disturbance can be most easily vercome are set out sympathetically in a book esigned for mothers[3] which, however, deals purely with the psychological aspect of weaning among other stages in the relation of adult to child, the sole contribution to material considerations being advice to make the first few artificial feeds specially palatable. It is perhaps not desirable that the laywoman should be burdened with psychology and dietetics in the same book, especially as few medical authors are yet qualified to advise on both. But we do look forward to a time when a first-rate text-book on mothercraft designed for the practitioner will not deal almost solely with the physical management of the child. It is true that in Dr. JEWESBURY's book two pages are allotted to nervousness between notes on alkalosis and tetany, and that encouragement rather than scolding is advised for enuresis, but the emotional aspect of the relation between mother and child is hardly touched. According to the report quoted above, pædiatrics should include a periodic survey not only of health but of "behaviour patterns" if it is to reach an understanding of the child. The authors of the report suggest that the most fruitful line of attack for future research is to be found in extensive study of a relatively small number of children spread over a long period, rather than in the statistical study of masses. Such studies, they think, seldom contribute greatly to the understanding of the individual case. Even more important, in our view, is the teaching of the study of the mental reaction of the child to its environment as an essential part of mothercraft; the series of wireless talks, initiated by Prof. CYRIL BURT on Tuesday evening last, are likely to encourage such study.

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[2] Mothercraft: Antenatal and Postnatal. By R. C. Jewesbury, .M. Oxf. London: J. and A. Churchill. 1932.

[3] New Babes for Old. By Winifred de Kok, M.R.C.S. ondon: Victor Gollancz. 1932.

ANNOTATIONS

NOTIFICATION OF FOOD POISONING IN LONDON

FOOD poisoning became a compulsorily notifiable disease in London by virtue of Section 7 of the London County Council (General Powers) Act which received the Royal assent last July, at the end of the session. A registered medical practitioner who suspects or becomes aware that a patient is suffering from food poisoning must forthwith notify the district medical officer of health. The notification must take the form of a certificate stating (*a*) the patient's full name, age, and sex, (*b*) the full postal address of the house or premises where the patient is, (*c*) particulars of the food poisoning, and (*d*) a statement whether the case occurs in the notifying practitioner's private practice or in his practice as medical officer of any public body or institution. Failure to notify will involve liability to a penalty not exceeding 40*s*. The practitioner is entitled to a fee for the certificate, 2*s*. 6*d*. if the case occurs in his private practice, 1*s*. otherwise. The section is slightly more elaborate than previous precedents elsewhere. Hitherto, in areas where food poisoning has been made compulsorily notifiable under local act, it has not been usual for Parliament to require notification by certificate or to insist upon more information than the mere name and address of the patient. Clauses of the usual type occur in the local Acts obtained in the current session by both Rochdale and Bury. The provision is not novel. A rapid glance through the local legislation of the post-war years reveals six instances of compulsory notification of food poisoning in the Acts of the session 1930–31, 11 in those of 1929–30, 4 in 1929, 10 in 1928, 3 in 1927, 1 in 1926 (Guildford), and 1 in 1924 (Wakefield). Presumably the search must be prolonged still further back in order to discover the local authority which has the credit of having originated the clause; presently, no doubt, the clause will find its way into a public health act applicable to the whole country. Meanwhile, its operation in the metropolitan area gives opportunity of large-scale trial. Prompt pooling of information as to food poisoning outbreaks (with particulars of their nature) will enable warnings to be circulated to medical officers who have the care of an enormous population. The clause in the recent London Act not only amplifies the information required; it also adds two further subsections. One of them enacts that if there are two or more medical officers in a district, the certificate must be sent to the officer who has charge of the area in which the patient is, or to such other of the officers as the sanitary authority may direct. The other new subsection provides that certificates may be sent to the medical officer either at his office or at his residence. In addition there is a consequential application of Section 57 of the Public Health (London) Act of 1891 to ensure that the receipt of a fee by a medical practitioner for the notification of food poisoning shall not disqualify him from membership of the county council or of a sanitary authority, or from service in any other public office.

HISTORY OF ST. THOMAS'S HOSPITAL

FROM its massive pavilions and its very special advantages of site and frontage St. Thomas's Hospital is to-day perhaps the most imposing of all the great London hospitals, and the story of its past should interest many outside its walls. Fortunately the records have been carefully preserved and the wise and public-spirited action of the treasurer and almoners in having the Hospital Chartulary translated and printed in a slightly abridged form has been followed by a book in which Prof. F. G. PARSONS describes with care and erudition the history of the hospital from the earliest times up to the year 1600.[1]

From the researches of Prof. PARSONS it would seem that St. Thomas's Hospital is a good deal older than its name suggests, and that before BECKET was murdered in 1171 the religious organisation that was to evolve into a hospital named after him cared for the sick in Southwark. The religious house in question was dedicated to St. Mary the Virgin, and was popularly known as the community of St. Mary Overei; it occupied the site of the present church of St. Saviour's, Southwark, and was staffed by Austin canons and canonesses. Prof. PARSONS believes that the infirmary of this institution from which the spital of St. Thomas grew began its work in 1106. He suggests accordingly that RAHERE must have looked carefully into the medical arrangements at St. Mary's Overei before founding St. Bartholomew's in 1123. In both institutions the canons belonged to the Augustinian order, and in both the hospital was subordinated to the Prior. It is interesting to learn that King JOHN, while he tightened this link between the Priory and Hospital of St. Bartholomew's, freed St. Thomas's from all dependence on the Priory of St. Mary. In 1212 a disastrous fire destroyed most of this Priory, and the Bishop of WINCHESTER, in appealing for funds, expressed himself as follows: "Behold, at Southwark an ancient spital built of old to entertain the poor has been entirely reduced to cinders and ashes." Prof. PARSONS tells us that the Bishop knew very well how credulous were the people to whom he was appealing, and that in order to reap an earthly harvest he must first sow heavenly seed; so he gave an indulgence of 20 days to subscribers. As a result ample funds were raised and the hospital was rebuilt on a new site over the road and now dedicated to ST. THOMAS À'BECKET. This skilful bishop was PETER DE RUPIBUS and he had served as a Knight under RICHARD I., so that here we have an early example of successful propaganda by an ex-Service man. He appears to have been one of the very few people always faithful to that much abused monarch King JOHN, and he crowned HENRY III.

Weaned in this way from the mother Priory in 1215, St. Thomas's has had an eventful history during the seven centuries that have since elapsed; the first volume of this history, crowded as it is with events and data illustrating the life of the hospital, only takes us up to 1600. The history will charm all who are interested in old medical foundations, and especially those who have received their medical education in the great hospital dedicated originally to St. Thomas the Martyr, but after the Reformation to St. Thomas the Apostle.

* * *

THE CHILD'S DEVELOPMENT

A SUMMARY of the existing knowledge of the growth and development of children, with a view to its practical application to the assessment of the normality or abnormality of individual children and to prognosis of their future possibilities has recently been issued by a Committee of the White House Conference on Child Health and Protection.[1] Both mental and physical status are considered; the former occupies twice as much space in the book as the latter, and leaves the impression that the resources available for mental assessment, although far from complete, are already not only more numerous but more useful than those on the physical side. It is, indeed, only in relation to skeletal development that anything suggesting a measured physical scale has been achieved. Medical science has been concentrated upon the abnormal and the diseased, and normal physical development has not received the attention it merits. Psychology, on the other hand, largely through the application of experimental methods, has, in a comparatively short period, attained at least an approximate idea of the normal in mental life and growth. Mental growth is here expressed in changing patterns of behaviour relating to posture, locomotion, prehension, manipulation, language, and adaptive and social behaviour. In most of these both mental and physical factors are involved. A fairly detailed account is given of the "patterns" appropriate to different ages, advancing by months in the first year and by gradually increasing periods later, and tests applicable to ages beyond infancy are fully discussed. Unfortunately, detailed knowledge of these tests is assumed of the reader, which detracts somewhat from the value of the report from the point of view of one seeking enlightenment. In spite of its title it supplies indeed rather an appraisement of materials and methods than practical help for the appraisement of any child. Chapters on the mentally superior, the mentally inferior, parental education, and sex teaching are of interest but do not provide any definitely new or original contribution to our knowledge of these subjects. The concluding section on methods of clinical examination is *probably the most valuable section of the report* especially to child welfare and school medical officers. Such examination is designed not merely to discover existing abnormality, but to search for indices of development and for preludes to the abnormal.

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[1] The History of St. Thomas's Hospital. Vol. I. From the Earliest Times Until A.D. 1600. By F. G. Parsons, D.Sc., F.R.C.S., F.S.A. London: Methuen and Co., Ltd. 1932. Pp. 256. 10*s*. 6*d*.

[1] Growth and Development of the Child. Part IV. Appraisement of the Child. Report of Committee on Growth and Development. London: D. Appleton and Co. 1932. Pp. 314. 15*s*

t would thus appear that 20 of the 84 children xamined by Dr. Morison had one (18 cases) or two 2 cases) defective parents. A reduction of 24 per ent. in the incidence of defectiveness could therefore have been effected in this series by preventing the propagation of the defective parents. The discrepancy between these two sets of findings points to the necessity of further research, and it is gratifying to note that the heredity of mental defectiveness is one of the subjects that is to be considered by the Departmental Committee recently appointed by the Minister of Health to inquire into the value of sterilisation as a preventive measure.

SUBJECTIVE SENSATIONS

It is the common experience of most to suffer at one time or another from such sensations as tingling, pins and needles, burning, or coldness. The mechanism of their production has been studied by U. Ebbecke[1] and others, and has recently been the subject of investigation by Sir Thomas Lewis and his associates.[2] Following constriction of a limb sufficient to stop circulation, tingling and allied sensations are soon felt at the periphery of the limb; gradually the parasthesiæ creep proximally towards the constricting band. If, however, at the onset of these sensations a constricting band is placed distal to the original one and the latter released, the tingling disappears. From experiments of this kind it has become evident that the tingling could not be dependent upon changes at the periphery, but must be the result of changes in the nerves underlying the constricting band; in other words, the tingling arose from changes not at the periphery but proximally at the site of constriction. H. C. Bazett and B. McGlone,[3] working on the sensations of cold and heat experienced immediately following the release of constriction, have brought forward evidence favouring their production by biochemical products elaborated during stasis of the blood. With sensitive thermocouples buried in the skin at varying levels, they determined the actual temperature of the tissues during the conscious feeling of cold and heat as above produced. Release of the blood flow with the arm bathed in water at body temperature gave rise to marked sensations of heat, but caused no alteration of temperature in the tissues of sufficient magnitude to account for the sensation experienced. These experiments, elaborated in various ways, led Bazett and McGlone to the deduction that the sensations were dependent upon the action of some biochemical factor upon the temperature nerve-endings. Alteration of the temperature of the arm and of the duration of constriction caused variation in the intensity and character of the sensations, and it appeared that the sensation was roughly associated with the probable acidity of the blood flowing into the dermal area previously rendered stagnant. Further weight is added to this deduction by the demonstration of the greater intensity of the sensations following stasis in the arm than of those following stasis limited to a finger; this observation is regarded as favouring the production of a chemical substance derived from the metabolic processes in muscle tissue during stasis. In this way the work becomes closely linked with that of Lewis upon the pain associated with intermittent claudication. Of great interest is the evidence, produced by various observers, that the sensation of pain, heat, and cold may be separately produced by chemical factors; whether there is a chemical link between stimulation of the normal skin and impulses arising in the sensory nerve-endings remains a problem of the future.

THE DEVONSHIRE COLIC

In 1617 Citois claimed that bad wine which had been treated with lead was a cause of colic among the Pictones or inhabitants of Poictou. This colica Pictonum he described excellently, but he attributed the disturbance chiefly to the acid of the wine. Late in the seventeenth century colic and paralysis following the addition of litharge to wine became notorious. Indeed, in 1696, the Duke of Würtemberg was so impressed with the danger of this practice that he issued a decree making it a capital crime. About this time colic became prevalent among cider-drinkers in Devonshire, but it was many years before lead was proved to be the cause. In 1703 Musgrave stated that the colic in Devonshire, sometimes associated with paralysis, was caused by the excessive use of crude cider which was too acid. Huxham, in 1752, described the colicky pains and paralysis in vivid fashion. He expressed his conviction that the Devonshire colic was due to the tartar extracted from the apples in the process of making cider. It was Sir George Baker, himself a Devonshire man, who first followed up the analogy between lead colic and the Devonshire colic (1767). He finally proved his point conclusively by demonstrating that the cider of Devonshire contained lead, while that of Herefordshire did not. He showed, further, that in Devonshire, but not in Herefordshire, it was a common practice to line the cider presses with lead. He also exposed the practice of adding metallic lead, litharge, or lead acetate for the purpose of correcting sour cider. His investigations created a great storm, and he was denounced as a traitor to his county. Although colic due to the employment of lead in the manufacture and storage of cider has now disappeared, minor outbreaks of plumbism due to cider-drinking still occur from time to time. It is of interest that Dr. and Mrs. L. N. Jackson should have discovered that lead colic is still endemic in Devonshire amongst cider-drinkers, though from a different cause. In a paper in our present issue they describe ten patients with lead colic, frequenting eleven public-houses in a Devonshire town. In six of these houses they found lead in the cider as drawn by the bar engine, though samples from the cask were in all cases free from lead. In these days when public-houses are subjected to so many restrictions, designed to protect the public, it is curious that they should be allowed to continue to use lead pipes to convey cider or beer from cask to bar engine.

THE PREVENTION OF POST-VACCINAL ENCEPHALITIS

In the absence of precise knowledge of the ætiology of post-vaccinal encephalitis any suggestion as to its prevention, however slenderly based, is worthy of notice. The observation made by the New York Poliomyelitis Commission, 1916—that among 954 poliomyelitis patients, 1 to 4 years of age, the attack-rate among the Schick-positive was six to seven times as high as among the Schick-negative children—has recently been recalled in another connexion. In a recent issue[1] of the public health reports of the U. S.

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[1] Arch. f. d. ges. Physiol., 1917, clxix., 395.

[2] Heart, 1931, xvi., 1.

[3] Arch. Neurol. and Psychiat., 1932, xxviii., 71.

[1] Public Health Reports, 1932, xlvii., 1553.

URINARY TRACT CHANGES IN PREGNANCY AND PUERPERIUM

NUMEROUS recent studies have demonstrated the anatomical changes which normally and abnormally occur in the urinary tract in pregnancy and the puerperium. Most of these examinations were carried out on post-mortem material or on the living subject by means of retrograde pyelography. The more recent introduction of intravenous pyelography has opened up a new method of approach to a difficult subject. William F. Mengert and Harry P. Lee[1] have lately used the method on 41 pregnant women, 20 primiparæ and 21 multiparæ. In order to establish an index of the amount and frequency of urinary tract dilatations, and as a basis for judging postpartum changes, the first radiograms were made during late pregnancy, and further exposures, usually three or four, were obtained during the fortnight following delivery. Stereoradiograms were taken in all cases, lest a single film, if it happened to be taken during a peristaltic contraction, might not represent the true size of the ureter. The antepartum pictures were taken from 1 to 65 days before the onset of labour. In all the primiparæ dilatation of some degree was present on the right side in calyces, pelvis, and ureter; on the left side it was found in about 90 per cent. of the cases. Dilatation of marked degree was three or four times as frequent on the right side as on the left, and it was encountered more often in primiparæ than in multiparæ. As to postpartum involution of the urinary tract, in eight cases a marked reduction in the extent of the dilatation was observed within 24 hours, while in 9 to 11 days after delivery all dilatation had disappeared in the majority of the normal patients examined. The involution of the urinary tract was, on the whole, slower in primiparæ; and was noticeably slower, too, in the presence of infection. It is suggested that this delayed involution may be a factor in the development of postpartum pyelitis. This assumption is not unreasonable in view of the important part played by dilatation of the ureter in predisposing a patient to antepartum pyelitis. It is probably true that antepartum pyelitis would never occur if the ureters were normal. Why they should become so often dilated during pregnancy is still a controversial question, and even more perhaps why the dilatation should be more frequent on the right side than on the left.

STREET MARKETS

IN the wide spaces of the country town market day with its bustle and spirit of holiday is a pleasant sight; in the narrow crowded streets of the metropolis certain disadvantages intrude upon the notice. The street markets of the East End have been likened to Oriental bazaars where the merchants expose for sale in the open anything from carpets to dates and drinking water. Councillor C. Bennett, at the recent Belfast Congress of the Royal Institute of Public Health, described the Bethnal Green Sunday morning "junk" market as providing a feast of horrors for the conscientious sanitarian. Old mattresses and furniture are interspersed with second-hand (or worse) clothing; boot stalls are side by side with barrows where apple fritters are being cooked in the open; slices of tinned pineapple, cakes, sweets, even sliced melon and cut oranges are exposed for sale alongside old hot-water bottles and gum boots. In one of the markets live-stock such as pigeons, canaries, geese, rabbits, guinea-pigs, and tortoise are sold side by side with foodstuffs. The traders pay little attention to the disposal of the refuse; at the end of the day shells, fish scales, feathers, decayed oranges, cabbage leaves, and wilted flowers are scattered over the roadway, eluding the provision by the borough council of receptacles for their storage. Nutrient agar plates exposed in several street markets grew colon bacilli and coarse streptococci of the salivarius and fæcalis types in addition to the moulds and saprophytes of quieter streets. Remedies are hard to apply in the face of the conservatism of Bethnal Green people. The vested interests of the market monopolies unfortunately prevented the use of Columbia market for the purpose for which the late Baroness Burdett-Coutts, with tremendous generosity, intended it. Councillor Bennett suggests that the stalls selling the more easily contaminated foodstuffs should be placed on a special site. Certainly every stall in the markets should be screened, and any on which foodstuffs are exposed should be completely enclosed, however much this may conflict with the conservatism of the public and with the wishes of the traders themselves.

THE CHILDREN OF MENTAL DEFECTIVES

SPECIFIC information about the mental state of families of mentally defectives is timely. The figures given in the annual report of the special school after-care subcommittee of Birmingham concerning the offspring of ex-pupils of the special schools are as follows: 1183 children were born into 602 families. In 312 of these families the father was an ex-pupil and in 290 the mother, the latter group including 38 illegitimate children born to defective mothers; 101 of the children are dead and many are under 5 years of age and thus did not come under observation; of the 494 children over 5 years old who had one defective parent 16 are definitely mentally defective—i.e., 3·24 per cent. This figure, however, certainly under estimates the true proportion of defective children, since systematic examinations for the admission of children to special schools do not begin until the ages of 7 or 8. It would be valuable to ascertain the number of children above 8 years of age, and also the number who are not attending elementary schools. But even if every allowance is made for cases not ascertained, it seems improbable that the numbers would be swelled to as much as double the figures given, and if this should prove to be a fair deduction the proportion of mentally defective children in this group would not exceed 5 per cent. This does not, of course, preclude the possibility that some of the children may be "carriers" of defect, and that a larger proportion of the grandchildren of the ex-pupils would be defective. But as far as they go the figures from Birmingham suggest that the prevention of propagation by defectives would not seriously reduce the number of the mentally defective in the next generation. The subcommittee hold that the evidence so far collected tends to disprove the popular idea that the mentally defective are abnormally prolific. A very different picture however is given by Dr. A. G. Morison in a study of 84 mental defectives published in our issue of Sept. 10th (p. 589). Of these children 23 belong to lower grades and 61 to higher grades of defectiveness. Of the 23 lower-grade children 5 had parents, one of whom was feeble-minded; of the 61 higher-grade children 15 had parents, one or both of whom were feeble-minded.

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[1] Amer. Jour. Obst. and Gynec., August, 1932

lmost unnecessary to add that such measures cannot eplace careful neurological examination, and should e used only in difficult cases and by men experienced n the technique.

THE MEIBOMIAN DUCTS

THE small operation for incision and evacuation of a chalazion is, as a rule, a simple matter, but occasionally, when they are multiple or become inflamed, or when they are recurrent, as they frequently are, they may become a very tiresome infliction, involving the necessity of several minor operations or causing an acute conjunctivitis which, in a severe case, may even simulate acute trachoma. The best way of handling these cases—and what is of even greater importance, of preventing their occurrence—is clearly stated in an article by Dr. Arthur Eppenstein, of Berlin,[1] which, since the method of prophylaxis is easy, should specially appeal to the general practitioner. The openings of the Meibomian glands appear normally as minute depressions in the margin of the upper eyelid, and the normal secretion is a tiny clear drop. Excessive secretion indicates the beginning of something wrong, and if it is mucoid or muco-purulent, or if a yellowish-white substance such as is seen in seborrhœa of the scalp is deposited at the openings of the ducts on the lid margin, the indication is to evacuate the duct, not by means of an incision but by pressure, applied preferably by means of a small glass rod inside the lid and a finger-nail outside which must follow the line of the duct from fornix to lid margin. This may have to be repeated several times, but if the ducts can be kept clear by this means it will probably prevent the more annoying complications from developing. Not only will this procedure be found useful in cases of recurring chalazion, but many cases of chronic conjunctivitis and blepharitis, obstinate to ordinary treatment, will rapidly improve when attention is directed to Meibomian ducts. For the operating surgeon, too, as Dr. Eppenstein remarks, it is of importance when preparing the lids before an intra-ocular incision, not to forget that the Meibomian ducts may be just as dangerous a source of infection as the lacrymal sac.

AMBULANT PHRENICECTOMY

AVULSION of the phrenic nerve to immobilise the diaphragm has been recommended chiefly as a supplement to artificial pneumothorax and thoracoplastic operations. The thesis that it may be an independent substitute for an artificial pneumothorax is presented in *Acta Medica Scandinavica* (vol. lxxviii., fasc. ii., 1932) by Dr. N. Oekonomopoulo of Athens. With an experience of 160 cases of pulmonary tuberculosis, treated by phrenic avulsion under ambulant conditions, he answers in the affirmative his own question: Can the artificial paralysis of the diaphragm be justifiably regarded as an independent operation in the treatment of pulmonary tuberculosis? He has kept 125 patients under continuous clinical and radiological control for periods up to four years; among them there were 33 who improved, and 40 who achieved a clinical recovery. Many of these 73 patients, who benefited from phrenic avulsion, had previously spent months and even years in seeking health by such conservative means as sanatorium treatment. Among the 125 were 71 in whom an artificial pneumothorax might have been induced; improvement was achieved in 19 of these cases and clinical recovery in 31—a result which Dr. Oekonomopoulo suggests would compare favourably with those which an artificial pneumothorax might have yielded. In his choice of subjects suitable for one or other operation, he tends to allot the comparatively early and limited lesions to phrenic avulsion, and the more serious cases to an artificial pneumothorax. Cases of *Fruhinfiltrat*, for example, he regards as suitable for phrenic avulsion, the effects of which are prompt, whereas an artificial pneumothorax, which is also justifiable in such cases, must be maintained for 6 to 12 months. In our present issue (p. 767) Mr. L. O'Shaughnessy describes his experience when working in the Sudan of 58 cases of pulmonary disease, for the most part tubercle, treated by phrenicectomy, which the primitive conditions led him to prefer to other forms of collapse therapy. The material was in no way selected, as even in the worst cases he hoped to obtain for the patient some relief of symptoms. The results as a whole, he says, were not encouraging, although in several cases there was a restoration to normal health for a year or more before the inevitable relapse. Mr. O'Shaughnessy suggests that the chief value of phrenicectomy as an individual measure may be found in cases whose balance has just not been tilted towards health by the ordinary methods of rest and diet. It may have a subsidiary function in the relief of symptoms caused by adhesions in the region of the diaphragm. Though phrenic avulsion requires considerable surgical skill, it is yet a simple operation, entailing little risk of immediate or late complications. An operation which requires no prolonged institutional treatment has, of course, a distinct advantage over one that implies months of residence in a hospital or sanatorium; and this has particular point in communities with a high tuberculosis-rate and little institutional accommodation.

THE RULES OF DEATH CERTIFICATION

A MONTH or two ago we published a letter[1] criticising the rules drawn up by the Registrar-General for primary tabulation when joint causes of death are stated on the certificate and we were then in a position to assure our readers that it is the definite policy of the General Register Office to rely upon the information of the certificate rather than upon arbitrary rules, the hindrance to giving effect to this policy being the failure of the medical profession so far to make extended use of the new form of death certificate, a form expressly designed to make it easier for the certifying practitioner to provide the Registrar-General with the information he needs. In our correspondence columns this week Dr. G. Sowden, medical officer of health for St. Pancras, expresses a doubt if the desirable practice mentioned in our leading article of August 20th (p. 405) is really adopted by the General Register Office. "In my experience," he writes, "I have found that the application of the rule of selection is invariably followed, and any disease in a lower group is preferred to one in a higher, notwithstanding the opinion of the certifying practitioner," and he cites an instance in which he was informed by the Registrar-General that the cause of death was to be classified to tuberculosis, although the immediate cause was certified as diabetic coma. The certifying practitioner, it seems, stated that tuberculosis was discovered owing to a post-mortem examination, and that the

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[1] Deut. med. Woch., August 12th, p. 1283.

[1] THE LANCET, August 20th, p. 419.

Treasury Department, Dr. Charles Armstrong summarises what is known of post-vaccinal encephalitis and its prevention, and suggests that collateral immunity against other diseases may carry with it a certain resistance to this grave, if very rare, complication of vaccinia. Certain experiments were devised to test the hypothesis, using a strain of vaccinia developed some years ago by Rosenau and Andervont, which produced a fatal meningo-encephalitis when injected intracerebrally into white mice. A dose of this virus was selected which was slightly less than that sufficient to kill all of a group of normal mice, and the effect of this dose was compared on groups of normal mice and in mice which had been previously immunised with diphtheria toxoid. At the end of 25 days the survivals in the normal group were 12 per cent., while in the immunised group they were 27 per cent. Previous immunisation to diphtheria toxoid thus appeared to turn the scales against the incidence of cerebral complications occurring in mice. Dr. Armstrong admits that the protection of a few mice from a cerebral virus infection by means of a previous non-specific stimulation of the defence mechanism does not necessarily lead to the conclusion that children could be similarly protected from post-vaccinal encephalitis, but in the absence of any other method of protection the suggestion arising from Dr. Armstrong's experiments might be followed up. He proposes that primary vaccinations, especially after the first year of life, should be deferred until immunisation against diphtheria or other diseases by means of inanimate antigens has been accomplished. Such a definite recommendation coming from a highly expert official is worth considering by those who have to face a delicate problem in administrative hygiene. Immunologists rightly hold fast to the strictly specific view of immunity upon which all that is most solid in their science is based, but " practice makes perfect " is a biological law of wide application, and it may well be that a preliminary exercise with one antigen somehow teaches the organism how to deal with others far removed in the scale of specificity.

THE BRIGHTER SIDE OF EPILEPSY

It is common knowledge that there are more epileptics outside institutions than inside, and that much, if not most, of the published work on epilepsy has been done in institutions. Epilepsy, in this respect, shares the lot of other diseases in that the clinical and scientific aspect of the serious cases which get inside hospital wards or institutions tends to become the text-book picture, often with a darker outlook than would be given by the experienced general practitioner. Naturally, it is the milder cases, with few fits and little mental deterioration or abnormality, which are found outside institutions, and of these Dr. H. A. Paskind, of Chicago,[1] gives a more hopeful outlook than that generally held. His paper is a study of the after-history of 304 epileptics who had had the disease for six years or more, many of them having suffered for periods up to 20, 30, or 40 years, or even longer. In this survey only 20 patients, or 6·5 per cent., were found to have deteriorated mentally, the whole of the remaining 93·5 per cent. being in excellent mental health, without the slightest trace of deterioration or other psychosis, and engaged in occupations similar to those of the great mass of the population. Such few cases of deterioration as were found were not more frequent among those who had the disease for a very long time. Dr. Paskind compares these extramural cases of epilepsy, as he terms them, with institutional patients, and finds, as one would expect, that his cases have very much fewer attacks, both of major and minor type, and that periods of freedom from fits are more frequent and last longer. The age of onset was on the average markedly later, about a third of the cases not having their first fit until after their twenty-fifth birthday. Among the families of the extramural patients, epilepsy, psychoses, alcoholism, and other manifestations of the neuropathic heredity, except migraine and so-called nervousness, were far less common than among those of institutional patients. It would require other surveys of records in private practice before Dr. Paskind's picture can be taken as typical; but it should at least encourage those who have epileptics under their care to combat the lack of incentive and of competition that induces the progressive narrowing of mental horizon generally considered typical of epilepsy.

LOCALISATION OF CEREBRAL TUMOURS

It is disappointing that increased knowledge of the physiology of the central nervous system has as yet brought little help in the localisation of cerebral tumours. Neurologists and neuro-surgeons continue to find regional diagnosis very difficult. The introduction of ventriculography by W. E. Dandy some years ago appeared to offer hope of a considerable advance in accuracy. The value of this technique has recently been assessed by A. W. Adson[1] and F. C. Grant,[2] who have published separately the results of an extensive trial of this method. Both have used two procedures, (1) direct filling of the ventricles with air, and (2) the replacement of the cerebrospinal fluid with air via the lumbar route; this method permits air to pass not only into the ventricle but also over the surface of the brain. Following direct ventriculography, a study of the X ray appearances of the outline of the ventricles in varying positions of the head frequently offers help. The internal hydrocephalus associated with tumours situated in the posterior fossa, the distortion of one or both anterior horns associated with frontal tumours, and the alteration in the outline of the lateral ventricles associated with temporal lobe tumours are well recognised. But the real value of this technique can be assessed only by a consideration of the results obtained in tumours not localisable after a careful neurological examination. Adson found that this method gave positive localising evidence in 23 per cent. of cases not localised clinically; Grant found it successful in 21 out of 48 cases without localising signs. Both observers have thus been able to reduce the number of cases in which they would have hesitated to operate. On the other hand, the technique is by no means safe; fatalities are recorded averaging about 6 per cent. This percentage must of course be considered with due regard to the bad prognosis in cerebral tumours which cannot be located for operation. Encephalography, a simpler procedure than direct ventriculography, is also less useful; it is contra-indicated in cases of increased intracranial pressure, especially in tumours situated in the posterior fossa. It may, however, give help in the differential diagnosis of varying conditions involving the cortex, such as cortical atrophy, traumatic lesions, and vascular disturbances. It is

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[1] Arch. of Neur. and Psych., August, 1932, p. 370.

[1] Amer. Jour. of Roentgenology, 1932, xxvii., 657.

[2] Arch. of Neurology and Psychiatry, 1932, xxvii., 1310.

POST-GRADUATE LECTURES

At the beginning of this winter session lectures nd demonstrations to old students and other raduates are again being given at many of the London eaching hospitals. The following are summaries of hree lectures delivered at Westminster Hospital in a ourse, held under the auspices of the Fellowship of Medicine.

THE INOPERABLE CANCER PATIENT

(MR. STANFORD CADE)

Of all cases of cancer seen in hospital only 20 per cent. are operable.[1] If this statement is correct it means that 80 per cent. of cancer patients when first seen are incurable by surgery. If one adds to their number the cases of post-operative recurrence—by no means a small proportion—it becomes obvious that the problem presented by this group of patients is as great as it is depressing.

It is to be hoped that a time will come when to-day's means of alleviation and treatment will all be measures of the past, swept into oblivion by some specific medicinal remedy. In the meantime what have we to offer to the non-operable patient? Above all, an attitude of helplessness and hopelessness, not infrequently adopted by both doctor and relatives, must be condemned. Certain therapeutic procedures, whether curative or palliative, should receive due attention, since they can without doubt increase the patient's happiness and comfort.

Physical agents.—So long as the action of radium and X rays on living cells is not understood, treatment by radiation remains empirical. If to this is added the fact that measurement of the quantities of energy received by the tissues presents the greatest difficulty, it is not surprising that radiation therapy has so far undergone successive periods of unjustifiable enthusiasm and depression. Nevertheless, as used by experts in institutions where team-work is understood and practised, X rays and radium have to-day no rivals in the treatment of malignant disease. The choice between them, or the combination of methods, depends upon the type of cancer, its situation and extent, and upon the general condition of the patient. The results to be expected can be summarised as follows:—

In inoperable carcinoma of the *uterus* arrest of hæmorrhage, diminution of discharge, and healing of ulceration, are usually obtained for periods varying from a few months to five to ten years or more in cases of apparent cure. The methods of irradiation by radium, X rays, or by combined treatment are simple and present no great technical difficulty or risk. For inoperable cancer of the *mouth* and *tongue*, my own figures, based upon 350 cases, show five-year survival in 11 per cent., healing of primary lesion in 85 per cent., local recurrence in 20 per cent. For periods varying from one to three years the disease appears arrested, healing occurs, and there is an amount of palliation which can only be fully appreciated if one is in constant touch with the patients. No lesion in the mouth is too advanced to be relieved in some measure by careful radiation. Death as a rule is caused by invasion of the lymphatics. Post-radiation pain, sepsis, neuritis, and necrosis can be avoided by accurate treatment, efficient screenage, and appreciation of the dose to be given. In inoperable carcinoma of the *breast* temporary retrogression of the disease and healing of ulceration takes place in 70 per cent. of cases. Death is usually the result of visceral metastasis, with a minimum of external evidence of the disease. In cancer of the *rectum* and *œsophagus*, however, treatment by radiation offers very little and can be considered purely experimental.

Daily observation of patients during the past eight years has convinced me that by physical agents palliation is obtained in the vast majority of cases, that such palliation is well worth offering to the patient, that apparent restoration to health and return to normal occupation is more commonly seen than is generally believed possible. The following few cases will serve to illustrate the palliative results of radiation treatment.

(*a*) Carcinoma of both breasts, numerous cutaneous ulcerative lesions, and wide lymphatic dissemination, in a patient aged 50. Radiation has enabled her to resume her occupation as a saleswoman with a firm of surgical instrument-makers. I have no doubt that many a surgeon, sceptical as to the value of radiation, has been served by this patient.

(*b*) Extensive local recurrence following perineal excision of the rectum. This patient was treated with radium in 1928, and sufficient palliation was obtained to enable him to travel to India every year and follow his occupation.

(*c*) Inoperable carcinoma of the tongue, with secondary deposits in the cervical glands. Radium has produced complete retrogression of the disease, enabling the patient to follow his occupation as solicitor's clerk for the past six years.

As no surgical acumen or clinical experience can forecast the result of radiation treatment, it is always to the benefit of the patient to receive such treatment.

Chemical agents.—It would be simpler to enumerate the metallic substances which have *not* been tried at some time or another in the treatment of malignant disease than to give a list of the metals which are supposed to have cancerocidal properties. Arsenic, bismuth, gold, lead, selenium, and uranium have had the longest trial. Of them all there is only *one* substance which need claim our attention, *lead selenide*, as introduced by A. T. Todd of Bristol. It is free from the slightest hint of "patent medicine," is obtainable at a very small cost, and can be given with safety by the patient's private doctor. In small doses (1 to 3 c.cm.) it definitely relieves pain and diminishes cachexia. In a few undoubted cases it has led to marked retrogression of the disease for periods of a few months to two years.

Biochemical agents.—Adrenaline, pituitrin, theelin, and some sera have all from time to time received publicity as cancer remedies. Recently an extract of parathyroid gland has been endowed with similar qualities. No confirmation of the original work is yet forthcoming. These substances need not claim the clinician's attention; they are so far of interest only in laboratory experiments. No doubt some have growth-restraining properties, but it is unfortunate that "growth" and "tumour formation" should be considered as synonymous.

Non-specific medicinal treatment.—In the treatment of the inoperable cancer patient much can be done in addition to radiation therapy by the following means:—(*a*) Blood transfusion is valuable as a preradiation measure if the blood count shows a fall of red cells to under 3,000,000. (*b*) General heliotherapy, with the exception of the affected area. (*c*) Administration of iron, calcium, vitamins, and liver extract. (*d*) Small doses of cocaine are occasionally immediate cause of death was diabetic coma. Dr. Sowden regarded that statement as indicating in the mind of the practitioner that tuberculosis had little if anything to do with the death and was only ascertained incidentally; it certainly was not the morbid condition which gave rise to the diabetic coma, and yet, he complains, tuberculosis is the cause selected by the rules of the General Register Office. To put it another way, if the post-mortem examination had not been made, the practitioner would probably have certified "Diabetic coma—Diabetes," and the cause would have been accurately recorded. We gladly publish Dr. Sowden's letter because it reveals a difficulty, which seems to be widely felt, of interpreting the present form of the death certificate and the annotations accompanying it. If attention is paid to the form of this certificate it must however be clear that, if the practitioner assigns diabetic coma as the immediate cause of death, the death would not be tabulated to diabetic coma, because "immediate" is specifically stated to be immediate in point of time. The Registrar-General might say very justly: "If you look at the official form you will see that the practitioner certified that the immediate cause of death was diabetic coma *due to* pulmonary tuberculosis. In other words, he certified that the real cause of death was the tuberculosis, although it reached its fatal termination by the instrumentality of the diabetic condition. By his certificate he made it clear that the immediate cause in his opinion was not the causa causans but merely an intermediate link in the chain between the real antecedent cause of tuberculosis and the death itself." The General Register Office has put up a hard fight to keep out of certificates "causes" which are merely terminal modes of exit; it does not want to classify by subordinate links in the chain of causation from the real cause to its fatal outcome. In cases where a long chain of antecedent causation is certified, some question might arise as to where the chain is to be cut for the purposes of classification; but no such question arises here. Had the practitioner intended to signify that the two causes were of independent origin and that the tuberculosis had merely a contributory and collateral bearing upon a death ensuing from the diabetic condition or its direct consequences, he would (or should) have used paragraph II. on the form.

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[1] Wood, F. Carter: Radiology, 1931, xvi., 291.

AN ENDOWMENT OF CLINICAL RESEARCH

THE Rockefeller Foundation has handed over to University College Hospital, London, the sum of £48,800 "to constitute a fund for the permanent endowment of a post, the holder of which will devote his whole energies to the advancement of clinical research." The gift is made with a view to encouraging the progress of clinical research on lines which the Medical Research Council has been developing in conjunction with University College Hospital Medical School since 1916. The idea underlying the scheme is that there should be brought into existence a body of workers, free from ordinary hospital routine and teaching, who would devote their whole time to the investigation of special clinical problems. Since 1916 the Medical Research Council has financed such a body of workers under the guidance of Sir Thomas Lewis at University College Hospital, and in 1930 the hospital formally recognised this group as a definite Department of Clinical Research. It is thus fitting that the post endowed should be the one at present held by Sir Thomas Lewis as physician-in-charge of this department. This magnificent gift will release sufficient funds to enable the Medical Research Council to make provision for further po of the same nature, and so to give younger worke the possible prospect of a life devoted to the scientific study of clinical problems unhindered by the distractions of consulting practice or by the distance from human patients which posts in [illegible] enforce. The establishment [illegible] research should help to resolve the divergence of outlook between laboratory and clinical workers which is clearly demonstrated in the discussion reported on p. 740, and bring about the closer alliance between medicine and other branches of science which Dr. Hutchison noted as one of the great needs of the day. The Rockefeller gift is entirely educational in scope and will in no way relieve any hospital thus endowed of the burden of raising funds for charitable purposes.

FAMILY PREDISPOSITION TO URINARY CALCULI

VERY little has been recorded about the heredity factor in the formation of calculi. The French, it is true, have created the term "diathèse oxalurique," but the appearance of oxalic acid crystals in the urine does not necessarily imply, although it may favour, the formation of calculi. Dr. H. C. Gram belongs to a family in which a predisposition to calculus formation seems to exist, and has recently published[1] the results of a study on oxalic urinary calculi from the point of view of heredity. In members of five generations observed there occurred with great frequency stones which were found on analysis to consist of oxalate of calcium. The trouble was noted only in males; this is in harmony with R. McCarrison's report on 34,325 Indian cases of calculus, in which the ratio of male cases to female was as 13·2 to 1. It is not easy to find an explanation for this high relative incidence of calculi amongst males. The long urethra and the common occurrence of prostatic obstruction amongst the elderly may suffice to explain the greater frequency of vesical calculi in men, but can have no bearing on the higher proportion of renal calculus amongst younger men. As regards the heredity factor, Dr. Gram admits that his investigation concerns only one family, and does not prove that stone formation always shows a hereditary disposition; but it confirms the general impression that a tendency to calculi, as to gout, may be a familial characteristic.

THE Royal College of Physicians of London will commemorate its benefactors on Tuesday, Oct. 18th, when the Harveian Oration on the Debt of Preventive Medicine to Harvey and to the College will be delivered by Sir George Newman at 4 P.M. The commemoration dinner will be held in the College on the same evening, and the annual sermon, re-established under the scheme of the Charity Commissioners for the administration of the Sadleir Trust, will be preached at the Mercers' Chapel, Ironmonger-lane, Cheapside, at noon on Oct. 18th, being St. Luke's Day.

ON Thursday next, Oct. 6th, at 3.30 P.M., a memorial to the late Sir Andrew Balfour will be unveiled at the London School of Hygiene and Tropical Medicine by the Earl of Athlone, Chancellor of the University of London.

Summer Time, which commenced in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday, April 17th, will cease on Sunday next, Oct. 2nd, at 3 A.M., when the clock will be put back to 2 A.M. The hour 2–3 A.M. Summer Time will thus be followed by the hour 2–3 A.M. Greenwich time.

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[1] Acta Med. Scandinavica, 1932, lxxviii., 268.

DIVERTICULITIS

(MR. ROCK CARLING)

DIVERTICULA are pouches of mucous membrane hich protrude through the muscular coat of the olon, especially in the sigmoid region. They occur etween the mesenteric attachment and the lateral ongitudinal bands, sometimes into the appendices piploicæ, and sometimes through the points of ntrance or emergence of vessels, and perhaps occaionally at unparticularised spots. They carry with hem little or none of the muscular tissue; they tend o expand when the muscular coat has been passed, hus becoming flask-shaped; and they rarely attain greater size than that of a black-currant or a very mall cherry. Bowel contents (including the material of an opaque enema) enter them freely and escape with little delay; sometimes so easily that they may fail to reveal themselves on a film. There may be but one or two—there may be dozens; and though by far most common in the sigmoid region, they may be found distributed throughout the colon and even in the cæcum.

Many single diverticula are certainly congenital, and the multiple form has been observed in embryos. The mere existence of diverticula does not necessarily involve any ill-health, any more than does the existence of a vermiform appendix. The pathology of diverticulitis is very like that of appendicitis. So long as the normal contents are free to escape there is no trouble, but if the contents be abnormal or too long retained, or the virulence of the bacteria be enhanced, organisms invade the tissues. The result may be mere catarrhal swelling of the mucosa, with further obstruction; or an abscess may form and burst inwards, leaving an ulcer; or burst outwards, leading to peritonitis. Even if no gross abscess is formed, adhesive inflammation may lead to attachment of the sigmoid to the bladder, or to other parts of the intestinal tract, or to the uterus and adnexa. Again, it may produce widespread cellular infiltration of the bowel wall, the formation of granulation tissue and, in due course, the proliferation of fibrous tissue and fat, with formation of a considerable tumour; finally resulting in a fibrous stricture, narrow and string-like or extensive and tubular. In many cases there are copious deposits of fat in the appendices, the subperitoneal space, and the mesentery. The inflamed diverticulum, when eroded, may lead to long fistulous tracks, winding towards the serous surface. Apart from narrowing, the general mucosa of the affected part of the bowel is not often abnormal; ulceration, local mucous or membranous catarrh are alike exceptional.

Some of the symptoms—such as abdominal discomfort, flatulence, and change of habit as to stools—attract little attention because they are common in both sexes as age advances, and are usually present round about the sixtieth year. Pain may be constant, or frequently recurrent, the intervals varying from a few days to many months. It usually occurs in the left flank, left side of the abdomen, or more widely on the left side from below the axilla to well down the thigh. Exceptionally, the pain may be right-sided, or suprapubic or vaguely "pelvic." It may accompany or follow evacuation of the bowels, perhaps with tenesmus. Cystitis may be the outstanding feature. Fever is slight, except in cases of abscess. Neither loss of weight nor loss of appetite is conspicuous. The secondary anæmia has no special features. When perforation peritonitis or intestinal obstruction occur it is without precise indication of diverticular origin.

Tenderness in the left iliac fossa is the predominant clinical sign, and it is often possible to feel the lowest part of the descending and sigmoid colon as a tender, tense, tubular mass, having the appropriate lie and course. The stools may be normal, or of late smaller than usual; neither blood nor mucus is constantly present and never in great amount; neither diarrhœa nor constipation is a regular feature, and rarely is either conspicuous. The passage of gas per urethram suggests a fistula of diverticular rather than of neoplastic origin.

Upon suspicion radiograms after opaque enema should be taken, not only antero-posteriorly but also with more than one axis of obliquity; not only with the bowel filling and filled, but also emptying and emptied, this last especially, since it may be only when the main barium mass has passed that the still-full diverticula throw clearly defined shadows.

The mildest cases should be treated by paraffin, lavage, and atropine. Graver cases call for colostomy, which should be kept open for three, six, or more months. Radiograms indicate progress and suggest the time for closure. It is probable that any considerable mass will result in narrowing, and some masses cannot be distinguished from cancer. When in doubt, resection is indicated. If this be impossible, an exclusion operation is sometimes practicable.

When intestinal obstruction is due to a band or loop adherent to the sigmoid, it should be remembered that the point of attachment may be concealing the orifice of a diverticular sinus. Vesical fistula can be successfully dealt with after a colostomy. Some diverticula, especially in the cæcal region, can be invaginated or excised.

Differential diagnosis is difficult. In colitis, the amount of mucus passed is much greater; diarrhœa is more severe and constipation more capricious—blood and membrane are likely to be passed freely. The extent of the tenderness is distributed much more uniformly round the colon, and the temperature is not infrequently subnormal. In cases of stricture there is a history of dysentery—or of perimetritis or of proctitis—or it may be evidence of past syphilis. Fæcal accumulation is more likely and more obvious. In adenoma with chronic partial intussusception there is sharp hæmorrhage, and the sigmoidoscope may give positive evidence. The real difficulty arises with cancer of the colon. The duration of symptoms is in general shorter; blood and mucus of some amount are more constant; diarrhœa may be troublesome, and the stools fœtid; distension of the abdomen is slowly and steadily, though insidiously, progressive; while loss of weight may be obvious and loss of appetite pronounced. There is, I think, much less tenderness, less pain, and less spasm. Absence of fever is just worth noting.

An error will be less likely if the alternative diagnosis of diverticulitis be remembered, and investigation be rigorously pursued until the point is settled.

MARY STEVENS MATERNITY HOME, OLDSWINFORD. Sir Hilton Young, the Minister of Health, last week opened the Mary Stevens Maternity Home at Oldswinford, Stourbridge, which has been given by Mr. Ernest Stevens, of Prescot House, Stourbridge, in memory of his wife. The building is the property of the Stourbridge town council which has leased it to the Worcestershire county council which has set up a committee to administer it. The cost of maintenance for the first year will be defrayed by Mr. Stevens. There are 15 beds, and the building stands in the park-like surroundings of White Hall, on the site of which it has been built.

of great benefit. (*c*) Abstention from morphia for as long as possible. Relief of pain can be obtained by a host of non-opium preparations which are preferable and which enable the patient to carry on his occupation.

In conclusion, it must be always kept in mind that in treating inoperable patients, the clinician must abstain from remedies which are "heroic" in nature. The *mortality* of the disease must not blind us to the mortality of the treatment. The inoperable cancer patient has a right to have his life prolonged, and this must be achieved at less price than that paid by numerous "operable" patients who stake all and lose all in the surgical act.

INJURIES OF THE ELBOW-JOINT

(MR. E. P. BROCKMAN)

THERE are certain principles which must be followed in the treatment of all injuries of the elbow-joint, and they are very well illustrated in the treatment of a *supracondylar fracture*. This results from falls on the outstretched hand or from direct violence. The line of fracture runs through the metaphysis close to the epiphyseal cartilage and the epiphysis may be displaced backwards and upwards, the degree of such displacement varying according to the severity of the accident. The child presents itself with a painful swollen elbow, the swelling having come up very rapidly. In order to obtain a good functional result early reduction of this fracture is essential. Under an anæsthetic the arm must be pulled out into full extension and whilst traction is being thus applied the forearm should be flexed up. After reduction has been accomplished it is not necessary to fix the joint in full flexion at once. Fix the forearm with a collar and cuff in that degree of flexion which can be obtained without any interference of the circulation resulting. The swelling around the elbow-joint rapidly subsides and the degree of flexion may then be increased. Keep the arm in full flexion for a week, and then gradually lower to a right angle, permitting the patient active movements through the free range. When the arm has been lowered to a right angle the collar and cuff may be removed and the patient allowed the arm free.

Under no circumstances should deep massage or passive movements be given in injuries of the elbow-joint. They cause pain and excite muscle spasm, hence diminishing the range of movement which is already present, and in the particular injury we are considering they produce myositis ossificans. Full range of movement is obtained with active use, though it may take several months before full extension returns. Never try to hasten the return of movement in an elbow-joint by manipulation; it will always result in loss of movement instead of an improvement. In a certain number of injuries of this nature the reduction of the displaced epiphysis is difficult. Always hesitate before advising an open operation to replace it, for, in my experience, an open reduction results in a great amount of permanent stiffness. And what may not look perfectly satisfactory as a skiagram may yet result in excellent function.

The nightmare in the treatment of this injury is the onset of a Volkmann's ischæmic paralysis. It may be caused by interference with the circulation from too rigid flexion; therefore, diminish this if there is any doubt. It may result from a large extravasation of blood at the site of fracture, and if there is any question this must be evacuated. In some few instances it undoubtedly follows injury to the muscle at the time of the accident and is then inevitable.

Fracture of the internal epicondyle is caused by an abduction strain falling on the elbow-joint. The epicondyle is torn off and displaced downwards or, if the elbow-joint is opened up very much may become locked between the ulna and humerus. The treatment of this injury is an open reduction with fixation of the piece of bone torn off in its proper position either with catgut sutures through the aponeurosis, or by means of a bone peg. The elbow is then fixed in plaster for a fortnight at a right angle. Subsequently, when the plaster is removed, the patient is allowed and encouraged to use the arm, and no massage of any kind is allowed. If the epicondyle is not fixed back in position, it remains pulled down by the muscles arising from it, and the function of the elbow-joint suffers accordingly. As a late result the ulnar nerve may be stretched and paresis may follow. The displacement of the epicondyle is always much greater than the radiogram would suggest.

Fractures of the head of the radius give rise to a great interference with function. Minor cracks are best treated with the elbow fixed in plaster for a fortnight; then there should be active use and no other treatment. When the anterior portion of the head is broken off, its removal at an early date is indicated, the remainder of the head being left untouched. If the head is comminuted all the loose fragments must be removed, and in both instances the patient is most comfortable with plaster fixation for 14 days. Complete excision of the head of the radius is to be avoided if possible, for it is sometimes followed by the subluxation of the distal end of the ulna and a weak wrist.

Fracture of the olecranon.—If there is little separation, fixation in plaster at a right angle is all that is necessary; thereafter the patient is allowed active use. When there is marked displacement of the upper fragment they must be wired together, and fixation in plaster subsequently adds to the patient's comfort. Fixation at 90° flexion is the position of choice. The fragments lie in position well and the patient is comfortable. Active use is allowed after the plaster is removed. The old position of full extension for the treatment of this injury should be given up, since it is uncomfortable and often confines the patient to bed.

Fractures of the lower end of the humerus in the adult are either T-shaped or comminuted. The conservative treatment of these injuries, in my opinion, gives the most satisfactory functional result, even if it is not possible to restore the fragments to their proper position. Open operation with fixation of the fragments by means of plates or screws may result in perfect anatomical reposition, but it also produces a very stiff joint with little if any movement. Under an anæsthetic the displacement of the fragments should be reduced as much as possible, and the arm should be fixed at a right angle in a sling with a posterior plaster splint. After the pain has started to subside, the patient can be allowed to have radiant heat and encouraged to move the joint so long as muscle spasm is not excited.

It will be observed that I have constantly laid stress on the value of active movements as an aid to the restoration of function after injury to the elbow-joint. Also that I have expressed a dislike for massage and passive movements. The elbow-joint after an accident responds to rough handling by becoming stiff, and once it has done so full range of movement is seldom restored.

edicine have appointed their commissions of quiry which have found a counterpart in the ofessional medical associations. The reports of ese official and semi-official bodies, and the essays n the same subject by individual leaders of the edical profession, such as Prof. G. Roussy, have ielded an imposing mass of evidence. The conscien- ous investigator, who took the trouble to wade rough it all, would probably emerge from the ordeal ith the reassuring conclusion that, in regard to ertain cardinal points, most of the would-be reformers re remarkably unanimous, at any rate in principle. n some quarters there seems to have been a tendency o grow impatient with the state of chaos into which nedical education has slid, and to find a remedy in a lean sweep and completely new start. But it is pretty afe to prophesy that reforms will come by evolution rather than by revolution, and that the old edifice will be respected as far as its main architectural features are concerned.

Some reforms are already materialising. In January of this year the *Conseil supérieur*, after consulting the faculties and schools of medicine and the *Comité consultatif de l'enseignement supérieur*, adopted the practice of anonymous, written examinations, with an eliminatory function—a somewhat sinister expression—at the end of the first two years of study. This practice will come into effect at the beginning of the scholastic year 1933. It should comb out the undesirables early in their misguided careers if the faculties and schools of medicine are prepared to use this new weapon with severe impartiality. To promote such impartiality some would-be reformers have advocated another step—the appointment of travelling boards of examiners whose ignorance of personalities would be an automatic check on favouritism. Another suggestion, prompted by the same line of reasoning, is that students should be examined by other faculties than those to which they officially belong, so as not to benefit from nepotic adjustments. The objection raised to both these proposed remedies is that they would be too expensive.

Unanimity, in principle, has to all intents and purposes been achieved with regard to the adoption of a uniform system of medical education, and the addition of an obligatory sixth year to the curriculum. This sixth year is going to be a big bone of contention, and the subject of a new study by the faculties and schools of medicine. Many would like to see it allotted mainly, or even exclusively, to essentially practical work. It should be of special value to those students who are not successful in securing house appointments, and who in the past have not been able to enjoy enough clinical experience by partial or whole-time residence in hospital. Realisation of this in itself laudable principle must, however, largely depend on hospital accommodation. The beginning of the sixth year is, in the opinion of some authorities, a suitable point from which the future specialists and general practitioners should diverge, the one from the other. The future specialist would in this case spend both a sixth and a seventh year in the subject of his choice, whereas the future general practitioner would spend his sixth year in practical work as a hospital resident. Another function for the sixth year would be to serve as a reservoir for obligatory medical and surgical studies flowing over from the congested fourth and fifth years.

The teaching of preliminary studies such as physics and chemistry has inevitably come in for criticism. The modifications recommended in this field are in favour of such studies being given a more medical slant than heretofore. There is, in fact, a general demand for less theory and more practice; but at the same time, as indicated at the opening of this paper, there is a feeling, amounting to a conviction in some quarters, that it is a fundamentally unsound principle to let the student in his first year plunge into a world of morbid changes before he has familiarised himself with the normal by a systematic study of anatomy and physiology. These subjects can be treated on practical or theoretical lines; and many hope that the teachers will abate their scientific austerity in a way that will enable the future general practitioner to apply in his daily routine the lessons he has learnt from his study of physiology and anatomy.

Concrete reforms have been advocated in the *Presse médicale* by Dr. Leriche, who would have the student devote two years to the normal body, two to the morbid body, and the last two to hospital work. During the first two years he would learn in hospital how to examine the pulse and take the blood pressure, the percussion and auscultation of the normal heart and lungs, and the various other methods of exploring the body in health. He would thus master the radioscopic appearance of the bones and viscera in health, and learn from rectoscopy and the various other 'scopies what the rectum, larynx, nose, &c., look like in a normal person. During the two middle years of his curriculum he would study microbiology, parasitology, and the natural history of various morbid states. In his last two years he would walk the hospitals day and night, and study such subjects as pharmacology, therapeutics, obstetrics, hygiene, and preventive medicine. As for specialising, a minimum of two years should be required and, in the case of surgery, four years. The same writer would like to see the old diploma of *Maître juré en chirurgie* resuscitated. The formal recognition of such a diploma should be a check on the non-specialised doctor who, fancying he has a flair for operative surgery, undertakes it with a light-hearted and vicarious courage which some of his patients may learn to regret.

MEDICINE AND THE LAW

Medical Certificates and Non-attendance at School

AT a meeting of a regional education committee in Northern Ireland during September, surprise was expressed at the discovery that parents are not obliged to furnish school attendance committees with a doctor's certificate when children are unable to attend school. The Ministry of Education for Northern Ireland had written a letter to the local authority in Antrim stating that it was advised that education committees had no power to require a dispensary doctor to issue a medical certificate free of charge. There certainly appears to be no statutory basis for any such suggestion. The law in Northern Ireland (under Part VI. of the Education Act passed by the Belfast Parliament in 1923) resembles the English law to be found in Part IV. of our Act of 1921. The parent has a statutory duty to send the child to school unless there is "reasonable excuse"; it will be a good excuse if "the child has been prevented from attending school by sickness or any unavoidable cause." If the parent neglects his duty, the education authority can summon him to produce "information and explanation." Nothing is said as to the form this information or explanation should take, or as to

SPECIAL ARTICLES

NOMENCLATURE OF MENTAL DISEASE

A PROJECT FOR ITS INTERNATIONAL UNIFICATION

BY DORIS M. ODLUM, M.R.C.S. ENG., D.P.M.
JOINT HONORARY SECRETARY TO THE NATIONAL COUNCIL FOR MENTAL HYGIENE

AT a scientific session of the European Committee for Mental Hygiene held in Paris on May 31st last, Dr. Henri Bersot (Landeron, Neuchâtel) presented a report dealing with the unification of international statistics in relation to mental diseases. At the World Congress on Mental Hygiene held in Washington in 1930 a standing committee on statistics was set up, the need for a common basis of nomenclature in mental diseases being recognised as fundamental. A glance at p. 13 of the sixth edition (1931) of "The Nomenclature of Diseases," drawn up by a joint committee appointed by the Royal College of Physicians of London, will be sufficient to show the unsatisfactory state of our present terminology, especially in regard to borderland conditions, which are classified under the generic term of psychoneuroses.

Dr. Bersot in his paper states definitely that he does not wish his draft scheme to be accepted absolutely, but merely to provide a broad general basis on which a common meeting ground may be established. In very few countries is there any attempt at a really scientific classification. The official statistics are mostly based on a classification which is drawn up rather with an eye to administrative than scientific considerations. It might be unreasonable to expect any radical change in official classification which would involve expense and loss of continuity, but sufficient modification could be made to enable each country to come into line with a common schema for the purpose of international statistics.

The classification tentatively put forward by Dr. Bersot relates only to established psychoses and defective mental development and is as follows :—

(A) Congenital troubles.
  (1) Oligophrenia.
    (*a*) Idiocy.
    (*b*) Imbecility.
    (*c*) Feeble-mindedness (*débilité*).
    (*d*) Cretinism.
(B) Endogenous psychoses.
  (1) Affective psychoses.
    (*a*) Mania.
    (*b*) Melancholia.
    (*c*) Other forms.
  (2) Schizophrenia.
  (3) Other forms.
(C) Reactive psychoses (*psychoses réactionelles*) (probably better described as adventitious or exogenous).
  (1) Psychogenic type, hysteric (*par psychogénie, hystéric*).
  (2) Other forms.
(D) Symptomatic psychoses.
  (1) Resulting from uræmia, diabetes, &c.
  (2) ,, ,, nervous diseases, &c.
  (3) Other forms.
(E) Organic states—encephalopathies.
  (1) General paralysis.
  (2) Cerebral syphilis.
  (3) Pellagra.
  (4) Encephalitis, various forms.
  (5) Senile psychosis.
  (6) Post-apopletic psychosis.
  (7) Post-traumatic psychosis.
  (8) Cerebral tumours.
  (9) Other forms.
(F) Epilepsy.
  (1) Essential or idiopathic.
  (2) Other forms.
(G) Toxic psychoses.
  (1) Alcoholism, various forms.
  (2) Morphinism.
    (*a*) Simple.
    (*b*) With complications.
  (3) Cocainism.
  (4) Other forms.

Dr. Bersot points out that the subtitles are not intended to be cut and dried, but merely to serve as illustrations. The essential is to agree upon the categories. Obviously the classification is incomplete, but the principle is important and is not wholly incompatible with the classification of the R.C.P. Nomenclature, the main headings of which are:

(1) Mental deficiency (amentia).
(2) Psychoses accompanying organic diseases.
  (*a*) Endogenous.
  (*b*) Exogenous (i.e., those resulting from the ingestion of poisonous substances).
  (*c*) Psychoses with primary degenerative brain changes.
  (*d*) Infective exhaustion psychoses.
(3) Functional psychoses (which include the affective and reactive groups of Bersot).
(4) Epileptic psychoses.

Dr. Bersot's scheme does not make any attempt to deal with borderland or psychoneurotic types, and it is precisely in regard to these that the R.C.P. Nomenclature is least satisfactory. The so-called psychoneuroses, with all their subheadings of neurasthenia, psychasthenia, and the like, are badly named, since the predominant factor is neither one which concerns the psyche or intellectual faculties nor the neural system as such, but is essentially a disturbance of the effective life which has secondary effects on the neurochemical functions of the organism. As it is the affective element which is predominantly concerned, the generic term "dysthymia" would appear to be acceptable. Those psychoses which the Bersot scheme called *psychoses affectives* would then come under the group "psychothymia" which is practically synonymous, and the cyclothymic syndrome (manic depressive)—which in some people is so extreme as to constitute a psychosis and in others so mild as to be no more than an instability of emotional equilibrium—would naturally find itself placed under the psychothymias or dysthymias, according to its severity. The R.C.P. Nomenclature has also a heading "Psychopathic personality," which in the present state of our knowledge is probably the best term available, although it is not quite in line with the continental word "psychopaths" which has a much wider connotation.

International statistics will probably be among the subjects to be discussed at the next reunion of the European Committee for Mental Hygiene, to be held in Rome in September, 1933, when it is hoped that individual psychiatrists and government officials will meet to discuss nomenclature and classification on a common international ground.

WHAT IS WRONG WITH THE MEDICAL CURRICULUM IN FRANCE?

(FROM OUR PARIS CORRESPONDENT)

IT would be easy and fairly accurate to answer this question with : Same as in Great Britain. There are however certain divergencies, of historically remote origin, in both the theoretical and practical education of the medical student in the two countries. One such divergency may be mentioned at once. In France there is an old tradition which sends the medical student straight to hospital in his first year. Discontent with many aspects of the French medical curricula led, some time ago, to their scrutiny by various bodies, from the *Conseil supérieur de l'instruction publique* downwards. Faculties and schools of ditions and supervision in such cases might be that was necessary. Education was a vital cessity in the treatment of tuberculosis. It was ential to fill the minds of patients with positive erests.—Dr. STEPHEN J. MAHER (New Haven, nnecticut) said it was a mistake to suppose that e ordinary arrested or cured case of pulmonary berculosis needs to be coddled and trained for ng periods in some intermediate institution before ing allowed to resume his old ideas about the portance of time, money, and achievement. Failure secure employment was largely due to wrong ideas out the contagiousness of tubercle among adults. he profession must now fight these ideas, and at the resent time of economy it must concentrate on ring patients in the sanatorium instead of asking or "post-graduate" schools, factories, or villages.

The social events of the conference were memorable. xcursions were arranged throughout Holland, to laces of medical interest and elsewhere, with the nobtrusive efficiency characteristic of the country.

THE OXFORD UNIVERSITY PROVIDENT ASSOCIATION

AN association has been formed in order to meet the special medical needs and risks of Oxford undergraduates. It is designed to give the student (1) early medical advice and adequate nursing accommodation in the event of illness or accident, and (2) a substantial contribution towards the expenses of operation and nursing when these are unavoidable. The contract is a personal one, renewable from year to year at the discretion of the member and of the Association, and, once the initial waiting period of three months has elapsed, the benefits apply to sickness or accident anywhere and at any time in the year. The annual premium is £3, and the benefits obtainable are as follows :—

(a) *Nursing.*—A contribution not exceeding £6 per week for a period up to four weeks towards the cost of maintenance in a nursing home or in a private paying bed of a hospital (maximum £24 in any year).

(b) *Investigations and consultations.*—A contribution towards the fee of a consultant of £2 2*s.* or £3 3*s.*, according to whether the patient visits or is visited by the consultant (maximum £8 8*s.* in any year), and a grant not exceeding £3 3*s.* for X ray examination and not exceeding £2 2*s.* for pathological examinations.

(c) *Surgical operations.*—Contributions not exceeding £21 in any year towards surgeon's fees.

(d) *Anæsthetics.*—Contributions not exceeding £2 2*s.* in any year.

(e) *Electrical and massage treatment.*—A grant at rates not exceeding 10*s.* 6*d.* per treatment (maximum £3 3*s.* in any year).

(f) *General medical services.*—Contributions of two-thirds of the fees of general practitioners (maximum £8 in any year).

The liability of the Association is limited (*a*) to the payment of £63 to a member in any one year, and (*b*) to the payment of £63 to a member in respect of any one operation or illness. The arrangements for professional services and treatment are entirely in the hands of the member, in consultation with his doctor.

The Association is for mutual benefit only. The council includes among its members the Master of Balliol, the Warden of Wadham, the President of Magdalen College, Oxford, and the Principal of the Society of Oxford Home Students, with Sir Farquhar Buzzard as chairman. Although the Association was only registered during the vacation, and term has not yet started, nearly 700 applications for membership have already been received. Further particulars can be obtained from the registrar at 116, St. Aldate's, Oxford.

THE SERVICES

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS

Twenty-five permanent commissions in the Royal Army Medical Corps are being offered to qualified medical practitioners, under 28 years of age. There will be no entrance examination, but candidates will be required to present themselves in London for interview and physical examination on Oct. 21st. Applications should reach the War Office not later than Oct. 14th. Further information may be obtained, either by letter or in person, from the Assistant Director-General, Army Medical Services, the War Office, Whitehall, London, S.W. 1.

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. M. J. Brosnan is transferred to the Permanent List.

The following appointments are notified: Surg. Lt.-Comdrs. M. Barton to *Pembroke*, for Chatham Dockyard; T. G. B. Crawford to *Pembroke*, for Chatham Hospital; and T. L. J. Barry to *President*, for course. Surg. Lt. T. W. Froggatt to *Vivid*, for R.M. Infirmary, Plymouth.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdr. A. G. V. Elder is placed on the retd. list.

Proby. Surg. Lt. A. P. Gorham to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Lt.-Col. T. B. Moriarty, having attained the age for compulsory retirement, is placed on ret. pay.

Maj. R. M. Dickson to be Lt.-Col.

Maj. W. H. Cornelius is placed on the half-pay list on account of ill-health.

The undermentioned from the secd. list are restd. to the estabt.: Majs. J. W. C. Stubbs and J. R. N. Warburton.

Lt. R. H. Small relinquishes his temp. commn.

Lt. J. M. Ryan to be Capt. (prov.).

ARMY DENTAL CORPS

Lt. E. C. Browne to be Capt.

INDIAN MEDICAL SERVICE

Lt. D. H. Waldron to be Capt.

Lts. (T.C.) C. H. Dhala and S. D. Dalal to be Capts. (T.C.).

ROYAL AIR FORCE

Flying Officer G. A. M. Knight is promoted to the rank of Flight Lt.

CONFERENCE ON CONTRIBUTORY SCHEMES.—The second annual conference of the British Hospitals Contributory Schemes Association was held at Torquay last week under the presidency of Major B. J. T. Ford, chairman of the Birmingham Association. Mr. T. W. Place, secretary of the Birmingham Association, read a paper on the Value of association in advancing Contributory Scheme Principles. He said that experience had shown that the rate of contribution required in order to finance a scheme to provide reasonable support for institutions giving treatment to its contributors was approximately 3*d.* per week per member. This was the maximum sum which the average worker could afford to pay, and the average contribution of most "flat rate" and "1*d.* in the £" schemes. A contributor transferring from one district to another should be considered eligible to participate in the privileges of the new scheme immediately. This gave the contributor a sense of security, and would do much to popularise the system. On the question of payments to municipal authorities Mr. Place read the recommendation of the executive committee that a contributory scheme should not make payment at higher rates than the authority would obtain by the normal process of direct assessment of patients or those liable to be charged on their behalf. He believed that an average of £1 per case was a reasonable sum to pay.

the evidence in support thereof. If what the parent says is unsatisfactory, a school attendance order can be made and a court of summary jurisdiction can enforce the order. In Northern Ireland, as in England and Scotland, there is a wide statutory power for the department to frame "grant regulations" governing the payment of local authorities' expenses in connexion with education. There is also, as in England, a statutory duty imposed upon the education authority to arrange for looking after the health and physical condition of school-children and to provide for medical inspection. None of these enactments, however, quite covers the case of paying for medical certificates where illness causes inability to attend school, or of exacting such certificates, without payment, from a dispensary doctor.

INTERNATIONAL UNION AGAINST TUBERCULOSIS

(FROM A CORRESPONDENT)

THE International Union against Tuberculosis, now in its fifteenth year, held its eighth international conference in Holland from Sept. 6th–9th. It is usual to select three topics for debate, concerned with biological, clinical, and sociological aspects of the disease. This year were chosen questions which are probably as controversial as any which authorities on tuberculosis have to consider—namely, (1) The Relations between Allergy and Immunity; (2) Treatment with Gold Solutions; and (3) Post-sanatorial Care of the Tuberculous.

Speaking on the first subject Prof. **JULES BORDET** (Brussels) distinguished between congenital and acquired immunity. Allergy, he said, was also an acquired property and probably favoured bactericidal action of the blood, but alone it was not sufficient.—Prof. **LYLE CUMMINS** (Cardiff) defined the problem more closely in a paper dealing with the relation between hypersensibility to the products of the tubercle bacillus and the augmented defensive powers against disease which result from infection. The increased "anti-resorptive" or anti-disseminative power possessed by allergic animals was clearly proved, he said, but according to A. R. Rich it was not due to allergy but to some other factor. Prof. Cummins, in South Africa, had not found that highly allergic individuals were resistant to tuberculosis. The facts were, indeed, the other way, the more marked the allergy the greater the activity of the disease. He believed that all the known manifestations of allergy—local, general, and focal—as produced by tuberculin tests, were harmful. Modern therapy tried to avoid allergic phenomena in the patient in order to shield the immunity factors. They were antagonistic to one another, although called into being by the same stimulus.—Prof. A. **CALMETTE** (Paris) said that allergy merely revealed the state of infection. It could not be considered part of immunity, for organisms which were refractory to tuberculous infection never became allergic if one injected into them the bacilli which were virulent to sensitive subjects. These factors which had an inhibiting effect on allergy had no influence on immunity. The principle of treatment by tuberculin was to make allergic phenomena disappear, but this did not lessen the resistance to reinfection.—Another aspect of the subject was considered by Dr. **WILLIAM C. WHITE** (Washington) who distinguished between the various chemical fractions which composed tuberculin.

In opening a discussion on the Use of Gold Therapy Prof. **LUIS SAYÉ** (Barcelona) said it was agreed that the best time for the use of gold salts was the early stages of the disease before ulceration and fibrous tissue have become prominent. But he did not therefore discountenance their use in advanced cases, for definite improvement could be shown in radiograms and the favourable results were increasing year by year. In the early stages, the successful results were over 80 per cent., and even with advanced cases, 25 per cent. of patients were benefited. The treatment might have an important contributory effect upon the success of pneumothorax. Ambulatory patients and children were good subjects, and in his experience, absolute intolerance was not found in more than 3 to 10 per cent. of cases.—The same optimistic view as regards intolerance was taken by Dr. L. S. T. **BURRELL** (London) who grouped the unfavourable reactions under the heading of fever, usually subsiding if the treatment is discontinued; albuminuria, of which he had never seen a severe case with moderate dosage; and skin reactions, probably the result of the accumulation of the gold in the body. In his experience of the remedy, the amount of sputum diminished under treatment, tubercle bacilli lessened or disappeared, and fibrous tissue increased. He had had best results from Sanocrysin and Crisalbine.—Dr. **BURNS AMBERSON** (New York) had reached an opposite conclusion. In comparing two groups of cases (admittedly small in number) he had not found beneficial effects, although the patients had been controlled carefully. Any remedy, Dr. Amberson pointed out, might be successful in early cases.—Prof. G. **SCHRÖDER** (Schömberg) thought it certain that the action of sanocrysin did not depend on actual killing of the bacilli. He believed that the drug stimulated the reticulo-endothelial system. Solganol oil was a useful adjuvant to gold treatment.

On the third question, the After-care of the Tuberculous, the opener, Dr. B. H. **VOS** (Hellendoorn Sanatorium, Holland) spoke purely as a clinician, and throughout his paper emphasised the importance of clinical control and supervision for each case. In Dutch sanatoriums, patients are kept until they are able to work for eight hours per day. Sheltered employment was the rule. Dr. Vos spoke of industrial settlements and considered that the financial aspect of the duration of the patient's stay in the colony was still unsettled. The need for after-care could be reduced by improvement in clinical treatment and by more intensive development of occupational therapy.—Dr. H. A. **PATTISON** described the work at Potts Memorial Hospital, New York. Many of the cases needing after-treatment acquired tuberculosis before they acquired the knowledge of any trade. They needed strictly vocational training. He described a variety of occupations for which his institution tried to cater. At Tomahawk Lake Camp, the average period of residence was ten months.—Dr. **HARLEY WILLIAMS** (London) described the arrangements for care work in Britain, chiefly by means of care committees, which were being organised in all parts of the country, partly voluntary and partly as an official subsidy. He deprecated the use of the term "after-care" on the ground that the patient has to be considered a member of a family unit.—Dr. **JANE WALKER** (London) would like to see simple houses of residence, established for those cases which are likely to last for some years with no great chance of improvement. Simple nifestations in these two cases was very striking. both the lesions were remarkably persistent and ractable to all the usual forms of treatment, which d been vigorously pushed from the commencement. e type in both might be called psoriasiform, with e reservation that the colour and depth of infiltran made it quite evident that the latter disease uld not be considered. The striking feature in the ale patient was the tendency to pigmentation, both the stains and cicatrices of the healed lesions and, pparently, quite apart from them around the posrior aspect of the neck. The tendency was not pparent in any of the other resistant cases in this ries. The W.R., as stated, was positive in the case the woman at the conclusion of her course, and at e time when the secondary eruption first appeared, hile in the man it was negative throughout. From is instance, then, it might be argued that the blood eaction plays little or no part either in the production r prevention of the arsenic-resistant eruptions. The V.R. reports in such cases have frequently exhibited pparent contradictions. The usual divergence is a ero-negative clinical relapse, with a return to the ositive phase when the eruption begins to involute. n the above cases it is interesting to note that the voman, whose manifestations yielded more readily han the man's, had a positive test, while his was egative during the period of their greatest activity. I have had no opportunity of determining the present state of the blood.)

Case 3.—Mr. C., aged 36, a hospital patient, provides another example of the resistant syphilide. On Jan. 20th, 1932, spirochætes were demonstrated in his small superficial coronal sore, and by the first week in March 4·5 g. of N.A.B. and 7 c.cm. of bismogenol had been injected. On April 20th the W.R. was positive, and a second course of 4·8 g. of N.A.B. was given. During this period a psoriasiform eruption developed on the extremities, on the back, and round the nipples. There was superficial scarring in some of the lesions, but no adenitis. This eruption was still active on July 22nd and the W.R. was positive. On August 2nd jaundice developed, so that N.A.B. injections could no longer be administered.

Case 4.—Mr. D., aged 33, developed a maculo-papular eruption while under treatment for a gonorrhœal periurethral abscess on Nov. 3rd, 1931. The, W. R. was strongly positive. The usual weekly injections of N.A.B. (4·5 g. in all) and intramuscular bismuth completed the first course on Jan. 5th, 1932. On the 12th anal condylomata appeared, and on the same day 0·25 g. of silver salvarsan was administered and repeated weekly with iodides by the mouth until March 23rd. On Feb. 8th the voice became husky, and psoriasiform lesions were noted on the arms. On March 15th there was dysphagia, and the laryngologist reported a syphilitic glossitis, with swelling of the epiglottis and ary-epiglottic folds. The patient was ordered large doses of Zittmann's decoction (Decoct. Sarsæ Co.). The W.R. was strongly positive. As skin lesions were still active on March 30th a fresh course of silver salvarsan (1·15 g.) was given, but on April 26th it was noted that "typical condylomata on the scrotum and papular scalp lesions had made their appearance." On May 4th treatment with Bivatol (a soluble preparation of bisalicylate in oil) was begun and given intramuscularly twice weekly until June 17th, 16 c.cm. in all. Improvement followed the first two injections, and healing of all symptoms was complete on the latter date. On July 15th, three and a half months after the last arsenic injection, the patient developed jaundice, which fortunately proved to be transient, so that the bismuth injections were shortly resumed.

Case 4, which clearly belongs to the arsenic-resistant group, illustrates the contention put forward by Nicholas, Lebeuf, and Charpy,[2] that bismuth will often succeed where various members of the arsenobenzine series have failed to effect a clearance of the cutaneous lesions. Case 5 is the only one of my series that supports Colonel Burke's view that arsenic-resistant syphilis is the result of inefficient treatment at the outset.

Case 5.—Mr. E., aged 24, presented himself with a primary chancre on August 5th, 1930, but neglected to attend after his second injection of N.A.B. A month later he reappeared with impetiginous lesions on the body, and unmistakable syphilitic palmar lesions of a psoriasiform type. His attendance continued to be irregular, but injections were given on Oct. 14th and 21st. On the 22nd I noted a generalised eruption of papular psoriasiform type. The W.R. was strongly positive. and a biopsy of one of the papules confirmed the syphilitic nature of the symptoms. This case also eventually yielded to intensive treatment with bismuth, the eruption having proved intractable after 3·9 g. of N.A.B. subsequently administered.

The criticism of inadequate treatment cannot apply to Case 6—the last of my series.

Case 6.—Mr. F. presented himself on March 7th 1932, with a penile sore of a week's duration. Spirochætes were found in plenty, the W.R. was negative, and between March 7th and May 18th he received 5·15 g. N.A.B. and 11 c.cm. of bismogenol. A month later he began his second course, and had been given 2·25 g. when on August 3rd he developed diarrhœa and vomiting, so that no injection was given on the 10th. The following week an infiltrated crusted lesion appeared in the site of the original penile chancre, and 0·2 g. of silver salvarsan was injected. This had no effect on the lesion which was seen to be spreading the following week. As in the other cases, a satisfactory clearance was achieved with bismuth.

Whatever the mechanism of production of the arsenic-resistant case, and supposing for a moment that inadequate treatment is the cause, there still remains the problem that such cases appear to be increasing, as anticipated by McIntosh and Fildes in 1911.[4] Drake and Thomson illustrate the increase graphically, and while their schedule of treatment (even if it is inadequate according to modern standards) has not varied since 1927, there has been a progressive increase of clinical and serological relapses since that date to the present time. In my own cases, with the exception of Case 5, the treatment had been orthodox and the attendances regular, and yet these malignant resistant symptoms developed—in Case 4 *actually during a course of injections*, and ergo, in spite of it. It seems to me that a theory of inadequate attack entirely fails to explain a failure of this kind. It will be noted that the type of relapse in Drake and Thomson's series is the gumma. I have had no instances of this either in private or hospital practice. The cases detailed above are of the late secondary order, and seem to me to fall into a category which is not comparable either to the gummatous or the far more common serological resistance or relapse. I should be greatly interested to know if they are unique or whether any of your readers can amplify the abnormality of reaction from their own experience.

In conclusion, I should like to associate myself with the opinion expressed by Dr. Browdy, that it is not syphilis but syphilitics we are to treat. While it is necessary to have a working basis of treatment, we must treat individuals as necessity demands.

I am, Sir, yours faithfully,

HENRY C. SEMON, M.D., M.R.C.P.

London, W., Sept. 23rd, 1932.

DEATH CERTIFICATION

To the Editor of THE LANCET

SIR,—I read with great interest and agreement the letter of Dr. Jameson on the subject of death certification, which appeared in your issue of August 20th (p. 419). I also noted that in your observations on Dr. Jameson's communication you intimated that it is the definite policy of the General Register Office to rely upon the opinion of the certificate and not upon arbitrary rules.

With great respect, may I venture to doubt if the desirable practice mentioned by you is really

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[4] Syphilis from the Modern Standpoint. London, 1911, p. 221.

CORRESPONDENCE

WANTED A HOSPITAL EXCHANGE IN LONDON

To the Editor of THE LANCET

SIR,—May not some system of centralisation for the admission of urgent and acute cases to the several general hospitals be adopted, somewhat on the lines of the County Council's fever hospitals services? Many general practitioners have probably at some time or other experienced the greatest difficulty and delay in finding hospital accommodation for an urgent case; telephone inquiries, interminable waiting, more inquiries, and then more waiting, and in the end, perhaps, nothing—a negative result, no vacancy! I can recall occasions when I have spent over an hour endeavouring to find hospital accommodation for an acute abdominal case.

Such a state of things is harassing to doctor and patient alike, and I would suggest the establishment of a central body, or bureau, which would deal with all the available local hospital accommodation, and allocate cases for admission when the need arose. Although there are undoubted difficulties in connexion with the administration of such a scheme—which differs in some respects from the example quoted above—yet I feel sure that these are not unsurmountable, and that the value of such a service can hardly be gainsaid.

I am, Sir, yours faithfully,
LOUIS M. LEVENTON, L.R.C.P. & S.

Liverpool-road, N., Sept. 23rd, 1932.

THE INCREASE IN ARSENIC-RESISTANT SYPHILIS

To the Editor of THE LANCET

SIR,—The issue raised by Dr. Sequeira is well timed and deserving of careful consideration by all interested in the modern treatment of syphilis. His purpose will not be well served by Colonel Burke's assertion that dermatologists fail to recognise that syphilis is not a cutaneous disease, but a general infection of the cardiovascular system. I hope to offer some evidence that there are grounds for the thesis put forward by Drake and Thomson in the paper referred to by Dr. Sequeira, and that, whatever the cause, inefficient or inadequate treatment is not the main or even a frequent factor. With the question what should constitute adequate treatment I do not propose to deal at present, although I submit that in five out of my six cases here cited the treatment was entirely adequate in the accepted sense of the term, and yet failed to prevent the onset of symptoms which can only be characterised as arsenic-resistant.

Before quoting my own cases I would refer briefly to the remarkable case instanced by Kloeppel.[1]

This was a man who contracted an atypical chancre three and a half weeks after coitus, and infected his wife three weeks later. There were copious spirochætes in the discharges of both primary lesions, and the Wassermann test was negative in both patients. The man was given no less than 2·3 g. of neosalvarsan in divided doses in eight days—the woman 1·05 g. in 7 days (a total that should appease the most strenuous of *venereo-therapists*)—without the slightest effect on the clinical appearances or on the apparent viability of the organisms. The lesions cleared up promptly on substituting a mercurial intravenous injection for the arsenical, and the author argues with seeming justification that the strain of the infecting organism must therefore have been arsenic-resistant.

It is not often that the partners in a luetic infection are simultaneously under treatment by the same physician, and as cases of resistant syphilis are relatively rare, I count myself fortunate in being able to report a dual infection of a resistant character.

CASE 1.—Miss A., aged 29, consulted me on April 13th 1932, for a crusted and slightly irritable eruption on the scalp, both palms, and right anguli oris. These symptoms had been present since January, when there were also some vulvar sores, following a risk taken in October, 1931. The W.R. was positive, and this in spite of a course of eight injections of sulpharsenol (3·3 g.), which had concluded in the last week of March. There were no buccal or pharyngeal lesions and no adenitis. In view of the failure of N.A.B. to prevent this clinical and serological relapse, and of the supposed more potent action of the silver salt, 0·15 g. was injected on April 13th. Slight improvement of the mouth lesion followed, but the crusting of the scalp and the palmar patches were not influenced perceptibly. On the 20th 0·2 g. neo silver salvarsan was given, and was accompanied by flushing and nitritoid symptoms, not pronounced enough to require adrenaline. On the 28th the mouth lesion had cleared up, but the scalp and palms showed little change. On May 5th, in view of the previous nitritoid tendency, 0·45 N.A.B. was given in 10 c.cm. Afenile (10 per cent. calcium chloride and urea solution), but in spite of this precaution the patient felt unwell, and had abdominal pain and diarrhœa on the following day. Two further injections of 0·15 N.S.S. were given on May 13th and 20th, but both the scalp and palmar lesions were still present although improving on the 27th, when she was last seen and referred to her home practitioner for bismuth injections for a period of six weeks.

Palmar lesions seem to be particularly common in this resistant type of syphilis. They occurred, as will be seen, in the case of this patient's partner, and in two of our hospital cases, and is stated by Nicholas, Lebeuf, and Charpy,[2] to be a relatively common manifestation.

CASE 2.—Mr. B., aged 42, who admitted responsibility for the infection of the preceding case, contracted the disease in August, 1931. A chancre appeared [illegible] observed on Oct. 22nd. The W.R. was already [illegible] of N.A.B. (7·0 g. in all) and ten [illegible] were given in weekly doses for the remainder of October and in November and December. In the first week of January an eruption appeared on the trunk and extremities. Three more intravenous injections of N.A.B. had no effect, in fact they appeared to aggravate it. Six weekly injections of silver salvarsan and iodide by the mouth were advised, and when I saw him on July 21st, 1932, I made the following note: "It is a deeply infiltrated scaly, nummular, psoriasiform eruption. There is a marked tendency to pigmentation, not only of the residual cicatrices, but of otherwise normal skin, especially on the neck and shoulders. Of the active lesions, varying in size from a threepenny bit to half-a-crown, some are covered with crust, others scaly. On the scalp the condition is that of a moderate seborrhœa, and there are no ulcerative tendencies as in Miss A., although as in her case there are infiltrated circinate lesions on the palms. There is no adenitis, and the W.R. has been negative on three occasions since the eruption first appeared in January." In view of the compete failure of the arsenobenzole group to achieve a clearance of the eruption it was decided to try the effect of protein shock methods. Malaria having been refused, Aolan (detoxicated milk), 5 c.cm., were injected intramuscularly into each buttock on July 21st, 1932. A pronounced febrile reaction resulted on the following night, and on the 27th the eruption was decidedly less crusted and infiltrated and no fresh lesions had appeared. Two more 5 c.cm. injections of aolan and iodides by the mouth were advised, and three weeks later the eruption had been replaced by stains and soft cicatrices, and no fresh lesions were noted.

This favourable issue supports the advocacy of Beume[3] for the value of whole blood injections—an even milder protein shock effect—in cases of salvarsan-resistant syphilis. The patient has now been having two injections of bismogenol, 1 c.cm. each, per week, and except for his pigmentation is entirely free of symptoms. The general resemblance of the clinical al crisis. Temp. fell from 104° to 102° F. in six hours. the third day a refill brought down temp. in 12 hours to Discharged well on March 15th. 1932.

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[1] Kloeppel, F. W.: Münch. med. Woch., 1926, lxxiii., 1936.

[2] Bull. de la soc. franc. de derm. and syph., 1932, xxxix., 16.

[3] Derm. Woch., 1926, p. 240; and 1929, lxxxviii., 812.

ASE 5.—Male. aged 38. admitted March 21st, 1932. for r. cough. and pain on the left side of the chest, duration days. Left basal consolidation with pleurisy. A.P.) c.cm.) on the first day. Temp. fell from 105° to 102° F. eight hours. with no marked diminution of respiratory e. Relief of pain immediate. Temp. oscillating °–103° F. for next two days. On third day a refill sed a drop in the temp. in three hours, rose again next rning to 102.° Another refill brought the temp. down to rmal in 10 hours time. After oscillating for another day two temp. remained normal from March 28th. Disarged on April 3rd. 1932. In this case definite crisis curred only after the third refill. Patient became irious the day after induction and remained so till the ond refill.

CASE 6.—Male, aged 21, admitted March 24th, 1932, for ver and pain on left side of the chest of five days' duration. mmencing consolidation with fibrinous pleurisy on the t base. A.P. on night of admission. Pain immediately lieved. Temp. fell from 105° to 102° in eight hours. Since did not fall below 102° for the next two days a refill was ven on the third day. Crisis occurred after 24 hours. his patient also became delirious the day after A.P. ischarged well on April 3rd, 1932.

CASE 7.—Male. came with a history of nine days' fever nd cough. Consolidation of whole of right lung. A.P. n second day after admission. Temp. fell from 103° F. to ormal in 20 hours. There was no subsequent rise.

I agree with Dr. Coghlan that the induction of A.P. gives immediate relief from pain. As regards emperature, in all my cases except one. the drop occurred only after six hours, whereas in his the crisis occurred within three hours. Only in two cases did the temperature drop to normal after the first nduction. In all other cases there was only a fall of two or three degrees. In two cases only did profuse perspiration occur after A.P. There is no doubt that A.P. does produce an artificial crisis, often temporary, sometimes permanent; in our cases, the crisis was more delayed and less dramatic than in the cases described by Dr. Coghlan. He claims that dyspnœa is relieved in half an hour. I was not so fortunate in my results. for though the respiratory distress was relieved owing to disappearance of pain, the rate of respiration came down only with the fall in temperature. Though my results were not so brilliant as Dr. Coghlan's I am of opinion that treatment with A.P. deserves a trial in pneumonia. In cases of acute pleurisy the results are really dramatic. In lobar pneumonia it is an important auxiliary to other forms of treatment. But, as Dr. Coghlan says, lobar pneumonia is emphatically not the disease on which to gain a knowledge of the technique.

My thanks are due to Colonel Skinner for allowing me to try this method of treatment on his cases. I am indebted to Dr. J. Mani for helping me in the operations.—I am. Sir. yours faithfully,

R. VISWANATHAN. M.D.,
Assistant Professor of Medicine and Assistant to First Physician, General Hospital, Madras.
London, Sept. 16th, 1932.

PATHOGENESIS OF CAVITIES IN THE LUNGS

To the Editor of THE LANCET

SIR,—I do not think Dr. Sowerbutts's paper carries us much farther with regard to the ætiology of the annular shadows. I agree with Dr. Andrew Morland when he says that it is far-fetched to imagine that air passes through the bronchial wall, giving rise to a single bleb or cyst. On the other hand, Dr. Morland's theory of the causation of vomicæ cannot possibly be accepted without careful research. It is partly based, if I do not misunderstand him, on the fact that Dr. Vere Pearson in an isolated case found a positive pressure in a large cavity. But any of us working at artificial pneumothorax therapy observe from time to time positive and negative pressures which cannot be explained from our knowledge of pulmonary physics. The "paradoxical reading" is an example. It is obvious that if you insert an artificial pneumothorax needle into a vomica you may. on the analogy of artificial pneumothorax. get either a negative. positive, or atmospheric reading.

During the last year my assistant, Dr. A. J. P. Alexander, has taken great trouble to get accurate information about every case with annular shadows admitted here, and he has reached the following conclusions, with which I entirely agree :—

(*a*) 5 per cent. of all patients admitted showed one or more rings.

(*b*) Tubercle bacilli were found in the sputum of all the patients who had these shadows.

(*c*) The rings altered in size in no definite direction or time.

(*d*) The study of these rings in a collapsed lung has been of no practical value.

(*e*) In most cases no definite physical signs were detected over them.

(*f*) All the cases showed extensive shadows.

The work, therefore, was leading us nowhere. The only point of any real value was that T.B. were present in every case. If a ring was evidence of tuberculosis this last observation might be useful.

When in Canada and America in 1930 I got the impression—erroneous perhaps—that they considered every ring as evidence of a cavity. Dr. Alexander. who has just returned from the German post-graduate course run by the Joint Tuberculosis Council, tells me he got this impression too. If this is correct, the ætiology of the rings is of great practical importance, because collapse therapy is likely to be adopted wherever they are found. As Dr. Sowerbutts says, the question can obviously only be settled in the post-mortem room. with a team consisting of the clinician, the radiologist, and the pathologist. To this team a physiologist might well be added. I am, Sir, yours faithfully,

J. D. MACFIE.
Winsley Sanatorium, near Bath, Sept. 24th, 1932.

LATERAL THORACIC JERK:
A SIGN OF ANEURYSM

To the Editor of THE LANCET

SIR.—When I wrote my account of the above sign of aneurysm of the descending aorta I mentioned having seen it with Dr. R. M. Scott, of Cleveland. in 1926. I have recently received a letter from Prof. F. C. Arrillaga, of Buenos Aires, calling my attention to a paper describing the same sign in the *Semana Médica* of April 9th. 1931, p. 937. Further papers by Dr. Arrillaga, with Dr. J. C. Dabove. appeared in the same journal later in the year (1931. ii., 7, 1253, and 1739), and he gives among others the following list of references to other authors which may be of interest to some of your readers :—

del Sel. M., and Taquini. A. C.: *Prensa Méd. Argent.*, 1931, xviii., 255.

Martini, T., and Joselevich, M.: *Semana Méd.*, 1931, ii., 1259.

Padilla, Cossio, and del Castillo: Ibid., 1932, ii., 76.

del Sel, Costa Bertani, and Gerlovich: *Prensa Méd. Argent.*, July 10th, 1932, p. 241.

Moia. B., and Dondo, H.: Soc. de Méd. Interna, August 26th. 1932.

I feel that without this letter the above references may elude readers in this country as they did me.

I am, Sir, yours faithfully,

GEOFFREY BOURNE.
Queen Anne-street, W., Sept. 26th, 1932.

adopted in the General Register Office. In my experience I have found that the application of the rule of selection is invariably followed, and any disease in a lower group is preferred to one in a higher, notwithstanding the opinion of the certifying practitioner. Recently a patient was admitted to a local hospital in a state of diabetic coma, almost moribund, and death occurred within a few hours. A post-mortem examination was made and evidence of pulmonary tuberculosis was found. The death was certified as follows: "(*a*) Diabetic coma, (*b*) Tuberculosis of lungs, (P.M.)." In a written communication the certifying medical officer informed me that, although tuberculosis had been found as a result of post-mortem examination, "the immediate cause of death was diabetic coma." A copy of this communication was, therefore, forwarded to the General Register Office, but notwithstanding this information I am officially informed that the cause of death is to be classified to tuberculosis. The recorded cause of death is, therefore, inaccurate, the written opinion of the certifying practitioner is ignored, and the strict rule of selection applied.

I am, Sir, yours faithfully,
G. SOWDEN.
Medical Officer of Health, St. Pancras.
Sept. 14th, 1932.

ANAPHYLAXIS FROM BEE STINGS

To the Editor of THE LANCET

SIR,—Dr. Goodman will find answers to most of his questions in a paper on Allergy in Relation to the Bee Sting, by R. L. Benson and H. Semenov.[1]

They consider the harmful effects of bees under three headings: (1) The venom of the sting, which *may produce a general and non-specific effect* of varying intensity depending upon the rapidity of absorption. The pharmacologically active principle of bee venom appears to be non-nitrogenous and has an action suggesting a saponin. This substance may act as a dermolysin releasing histamine actually present in the skin, but Benson and Semenov have conducted interesting experiments from which it seems probable that the venom itself may contain a histamine-like substance. This if introduced into a vein may produce shock. (2) Allergic reactions due to pollen carried by bees. Cutaneous allergic reactions can be produced experimentally by testing certain pollen-sensitive individuals with extracts from the bodies of bees, but clinically such a happening must be a very chance phenomenon. (3) Allergic reactions in the human from sensitisation to allergens inherent in the bee. These reactions are of increasing degree with successive bites and consequently common in bee-keepers. One of the earliest of these was that reported by A. T. Waterhouse.[2] Desensitisation in these hypersensitive individuals may be brought about by increasing doses of bee extract made from the posterior eighth of an inch of the bee's body. Dr. Goodman's case seems to fall into this category, but it is remarkable that the sting a week previously was without any ill-effects. Possibly this sting was only venom, and free from the intrinsic bee protein which seems responsible for this third group.

The poison gland system of the bee consists of a small alkaline and a larger coiled acid gland, the secretion of both of which is poured into the bulbous base of the poison canal and mixed to form the poison. From the canal it is expelled during the stinging act by a valve-like structure on each of the hollow darts forming part of the barbed shaft which is left behind in the victim's flesh with the sting.

In a recent publication[3] I have summarised the reported cases of allergic reaction to various insect stings, bites, and emanations.

I am, Sir, yours faithfully,
London, W., Sept. 25th, 1932. GEORGE BRAY, M.B.

TREATMENT OF PNEUMONIA BY ARTIFICIAL PNEUMOTHORAX

To the Editor of THE LANCET

SIR,—In your issue of Jan. 2nd (p. 13) Dr. J. J. Coghlan described 6 cases of pneumonia treated by artificial pneumothorax. I have up to now adopted this form of treatment in 11 cases at the General Hospital, Madras, 4 of them being cases of acute fibrinous pleurisy. In the first 3 cases I adopted Coghlan's method of giving morphia and atropine half an hour before the induction; in all the other cases morphia was not given, and I did not observe any difference. So as to cause the least possible disturbance the patient is allowed to lie flat on the back with the arm on the affected side raised over the shoulder. I choose an interspace in the anterior axillary line where the lung is not consolidated—a precaution which is unnecessary according to Coghlan. After sterilising the skin thoroughly, I infiltrate with novocain 1 per cent the whole track for the pneumothorax needle, including the parietal pleura. In my experience the inflamed parietal pleura is not so hypersensitive as Dr. Coghlan thinks; in two cases where I wanted to avoid two successive pricks, I performed the induction without novocain, the patients making no demur. In every case 500 c.cm. of air was *inserted at the* first induction, the amount being varied at the refills. In the cases of simple pleurisy no refill was given, nor in cases where crisis occurred and temperature remained normal after the first operation. I will add brief notes of the 7 cases of pneumonia.

CASE 1.—Well-nourished male, aged 35, admitted Feb. 15th, 1932, for fever and cough of four days' duration. Evident respiratory distress; temp., 101·5° F.; pulse, 120; resp., 40. Left basal consolidation. A.P. (500 c.cm.) on the second day of admission. The effect was dramatic. He had profuse perspiration in ten minutes and temperature came down to normal in two hours. This was the only case in my series in which a crisis occurred as early as in Dr. Coghlan's cases. Patient made an uneventful recovery.

CASE 2.—Male, aged 23, admitted March 7th, 1932, for fever, cough, and pain over the right side of the chest of 36 hours' duration. General condition bad though fairly well nourished. For two days signs indefinite, on third day definite consolidation of the right base with extensive pleural involvement. A.P. 500 c.cm. Pain immediately relieved. Temp. fell from 104° to 101·5° F. in six hours, with improvement in general condition. Developed delirium tremens the next day. Refill on sixth day after admission. Temp. fell from 104° to 99·5° F. in five hours, but rose again in a few hours and patient died the next evening. This case illustrates that A.P. induces an artificial crisis which does not *necessarily correspond* to the expected natural crisis.

CASE 3.—Male, aged 19, admitted March 7th, 1932, for pain on left side of chest and cough duration two days. Left basal consolidation, with well-marked pleuritic rub. A.P. 36 hours after admission. Temp. fell from 103° to 100° F. in five hours but rose again to 102° after two hours, and dropped to 99° the next morning—i.e., 18 hours after induction. As the evening temp. rose to 100° refill (500 c.cm.) given two days later. Discharged well on March 15th, 1932.

CASE 4.—Male, aged 30, admitted March 10th, 1932, for fever and pain on the right side of the chest and cough duration seven days. Consolidation of right lower lobe. A.P. on the same day. Pain immediately relieved, no

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[1] Jour. Allergy, 1929–30, i., 105.
[2] THE LANCET, 1914, i., 946.
[3] Recent Advances in Allergy, London, 1931.

PANEL AND CONTRACT PRACTICE

Appeals to the Ministry of Health

If a complaint has been tried by a medical service bcommittee, and if either side is dissatisfied with e decision reached—and confirmed (or altered) by e main insurance committee—it may appeal to the inister of Health. The whole matter is then investi- ted again, but on this occasion legal help may be tained and all the evidence is given on oath before ficials of the Ministry—usually with a barrister in e chair.

In London it has lately been the custom, perhaps om motives of economy, for the clerk to the ommittee or his deputy to represent the insurance ommittee at these appeal cases. Previously counsel ere always briefed on these occasions, but experience eems to show that the clerk who has been present at he medical service subcommittee's hearing is quite apable of presenting the committee's case. At the ame time it is somewhat questionable whether it s good policy that the clerk of the committee, who hould really be an impartial administrator of the nsurance regulations, should be the person to marshal he evidence so as to ensure if possible that the views of the practitioner do not prevail.

In the nature of things most appeals are by doctors against a decision in which the medical service subcommittee has found in favour of an insured person. In these cases counsel (or latterly the clerk) appears to urge the committee's decision on the appeal tribunal. There is room for doubt, however, whether the committee's influence is used with equal force in favour of a doctor who is defending an appeal by an insured person against the committee's decision. Furthermore, in charges against a practitioner the latter is apt to be handicapped by the fact that the incident in question may only be remembered with difficulty as one of 30 or 40 in his day's work, whereas to the patient it is probably the only important event of the day. Even then the patient very often reports it wrongly, as can be proved later by prescriptions and written testimony.

There are, at present, some important outstanding cases whose appeals have not yet been heard. One of them, already described at some length in our columns, is the case of an elderly practitioner who was refused permission to employ an assistant on the ground that he, as principal, did not do enough personal work in the practice. The practice was being kept going for the widow until a son and daughter were able to qualify and carry it on.

PROBLEM OF A HOSPITAL STAFF

Another relates to the conditions of insurance practice at one of the hospitals in London, now under the control of the London County Council. This case was heard by the medical service subcommittee for London, and reported to the main committee last April. The decision was :—

> "That the committee are of opinion that there has been a complete failure on the part of the practitioner referred to in case M32/15 as Dr. A. to comply with the terms of service for Insurance Practitioners, either personally or by deputy, in respect of the insured persons for whose treatment he has accepted responsibility under the National Health Insurance Acts, and that the practitioner, the Approved Society, and the Minister of Health be so informed."

It should be noted here that no penalty—either caution, censure, or deduction from remuneration—is suggested. The case is interesting, and largely depends upon the right of an insured person to choose his own doctor. Shortly, the facts, as given in the report, are as follows :—

Most of the nursing staff of this hospital are insured persons, and as such have chosen the medical superintendent as their insurance practitioner. It has always been the custom for this hospital to attend to its staff gratuitously, and, if need be, to admit them to the wards. The duty of looking after all the staff (including the non-insured staff) has always been carried out by the senior assistant medical officer, who is now the surgeon specialist to the hospital, and as such is now no longer under the control of the medical superintendent. The complaint arose from an approved society. The society received a claim from one of its members on the hospital staff with a certificate, signed by the surgeon specialist, which was not on the proper medical form (Form Med. 40) but was as follows :—

> This is to certify that $\left\{\begin{matrix}\text{Nurse}\\ \text{Sister}\end{matrix}\right\}$ ....
> *is off duty owing to ill-health.*
> Taken off duty............
> Resumed duty............
> Signature............

The doctor was asked to supply a certificate on the proper form, but stated he was not an insurance practitioner, and he had a deep-rooted professional objection to stating on a certificate what was the matter with a patient, since that was a confidential piece of information. The society made the following points :—

1. The record card of the member could not, from the certificate in question, record the nature of the incapacity.
2. There was no indication whether the case was one for compensation.
3. Owing to the length of illness and absence of diagnosis the society could not tell whether the case should be sent for examination by a referee.

The society also stated that a certificate had been given three weeks in advance in connexion with the period of recuperation.

The report goes on to say that from the evidence submitted it appears that at the passing of the Act there was a discussion between Dr. A. (the superintendent) and Dr. B. (the senior assistant, now surgeon specialist) with regard to one of them accepting service under the Act in connexion with the treatment of the insured staff of the hospital. Apparently, neither was willing to accept service under the Act, but it was realised that if they did not do so the capitation fees payable in respect of medical treatment of the insured staff would be lost to the institution. It was eventually agreed that Dr. A., the superintendent, should enter into an agreement with the insurance committee that the money received by him under that agreement should be allocated to a fund for the benefit of the staff of the hospital, and that Dr. B. should continue to give the medical attendance as before—of course *gratuitously*. This arrangement has continued until the present time.

The question arose as to whether nurses or other members of the staff were entitled to medical treatment from the staff as of right. It was agreed that they receive it at this hospital as elsewhere—as of long-standing custom—and that it is the practice in such institutions for treatment to be provided by a particular member of the staff. The committee concluded from this statement that Dr. A., as administrative head of the hospital, is ultimately responsible for seeing that members of the staff receive any medical care and attention they require, and that the particular officer giving that care is really acting as

PUBLIC HEALTH SERVICES

Public Assistance Institutions in the Counties

MOST of the county poor-law institutions transferred under the Local Government Act, 1930, are of the mixed workhouse type, and very few have separate hospitals which can be taken over by the health committees. Although large expenditure on new buildings is prohibited by financial stringency, some of the reports show that many improvements are possible under existing conditions.

In ESSEX (est. pop. 1,195,100) Dr. W. A. Bullough says that the public assistance institutions need a careful survey, with the object of reclassifying the patients and the accommodation available, but that such a survey is impossible with the present staff. In the meantime many inexpensive extensions and alterations have been made.

Thus a day room for 50 casuals has been provided for the Colchester institution, which will be eventually closed when extensions to the modernised Stanway institution have been completed. Electric lighting has been installed at Tendring, and improvements to the children's nursery have been carried out at Braintree. Saffron Walden institution will be closed when it is possible to erect a new building at Takeley. Improvements have been carried out to the laundry at Epping, and the erection of a new nurses' home at a cost of £11,000 has been approved. A new nurses' home has been nearly completed at Orsett. Many improvements have been effected at the Oldchurch-road Institution, Romford, so as to secure an efficient maternity block. A special puerperal fever unit has been established at this hospital, which actually functions as a general hospital for a population of about 350,000. A special puerperal fever unit has also been established at Chelmsford; whilst at Maldon there are 100 unused beds, the future of which is under consideration. A consulting staff has been appointed for the benefit of the 4 to 5 thousand inmates in these institutions, and will chiefly operate in connexion with Oldchurch Hospital.

Many administrative changes have been introduced. The amount of alcoholic liquor is to be reduced and its use standardised. Arrangements have been made for the improvement of the milk-supply. Steps have been taken to reduce the prevalence of bedsores. Waking hours have been under consideration. The average time for awakening the patients was 5 A.M., whilst the average time for the first meal was 7 A.M. The question of dietaries has received much attention and an attempt is being made to provide each inmate with a helping in accordance with appetite instead of the prescribed quantity laid down. Apparently the actual quantity of food mentioned in the orders of 1913 and 1930 has to be available, even if not actually served on the tables. The grading and salaries of the nursing staffs are under consideration, and it is intended at an early date to establish a county nursing service, whereby suitable candidates from the secondary and other schools can secure their three years' training in the county institutions.

In NORTHANTS (est. pop. 218,300) the report of Dr. J. M. Mackintosh shows that improvements have been made in the provision for the aged and infirm and the chronic sick. These have been secured by extensions at Kettering, whilst another extension at Oundle will enable the existing institution at Thrapston to be closed. The more difficult problem of providing modern accommodation for the sick and aged in the west of the county is to be met by extensions of the Daventry institution, which will enable the out-of-date mixed workhouses at Brackley, Brixworth, and Towcester to be closed, thus securing considerable economy in administration. As regards the acute sick, it is agreed that the voluntary hospitals are adequate to meet the case, and arrangements have been made for a suitable payment for the services rendered. Maternity work will be concentrated at the Kettering institution in coöperation with the Kettering general hospital. This will avoid the expense of maintaining midwives at other institutions. It is also suggested that new nursery accommodation should be provided at Kettering. During the present year it is hoped to make progress with the ascertainment and classification of mental cases, and proposals embodying principles approved by dietetic experts will be brought forward for all the institutions.

In DERBYSHIRE (est. pop. 618,500) the services of specialists have been made available for the public assistance institutions, and a preliminary meeting with the voluntary hospitals committee was held on Feb. 11th, 1932, to consider the hospital provision of the county.

In WILTSHIRE (est. pop. 294,100) the steps taken towards classification are the provision of the Marlborough Children's Hospital (40 beds), the concentration of difficult male cases requiring male nurses in special wards at Salisbury, the concentration of female mentally defectives at Wilton, and the use of the male wards at Purton for juvenile idiots and imbeciles. Apart from the care of the blind, no department of treatment has yet been removed from the poor-law.

In DURHAM (est. pop. 934,100) the problem of classification is receiving attention, and the public assistance committee has been able to help the Sedgefield mental hospital by the reception of 50 male and 50 female patients, suitable for transfer, on the "house" side of two institutions.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 17TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 19 (last week 9); scarlet fever, 1547; diphtheria, 854; enteric fever, 95; acute pneumonia (primary or influenzal), 446; puerperal fever, 41; puerperal pyrexia, 123; cerebro-spinal fever, 25; acute polio-myelitis, 38; acute polio-encephalitis, 4; encephalitis lethargica, 7; continued fever, 1 (Tyldesley, Lancs); dysentery, 21; ophthalmia neonatorum, 81. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 20th–21st was as follows:—Small-pox, 22 under treatment (last week 19 and 2 under observation); scarlet fever, 1214; diphtheria, 1351; enteric fever, 17; measles, 301; whooping-cough, 361; puerperal fever, 22 (plus 11 babies); encephalitis lethargica, 232; poliomyelitis, 5; "other diseases," 123. At St. Margaret's Hospital there were 18 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 7 (0) from measles, 7 (0) from scarlet fever, 21 (4) from whooping-cough, 39 (10) from diphtheria, 81 (17) from diarrhœa and enteritis under two years, and 13 (2) from influenza. The figures in parentheses are those for London itself.

Deaths from diarrhœa had not increased: Liverpool still stands highest with 13 deaths, Leeds following with 5, Birmingham with 4, Croydon, Manchester, and Leicester each 3. Barking recorded the only death from enteric fever. Three of the deaths from whooping-cough were reported from Southampton, 2 each from Sheffield, Leicester, and Grimsby.

The number of stillbirths notified during the week was 257 (corresponding to a rate of 40 per 1000 total births), including 38 in London.

NOTES, COMMENTS, AND ABSTRACTS

HRENICECTOMY IN THE TREATMENT OF PULMONARY DISEASE *

WITH AN ANALYSIS OF FIFTY-EIGHT CASES

BY LAURENCE O'SHAUGHNESSY, M.D. DURH.,
F.R.C.S. ENG.

LODGE RESEARCH SCHOLAR, ROYAL COLLEGE OF SURGEONS OF ENGLAND; LATE SENIOR MEDICAL INSPECTOR, OMDURMAN

PHRENICECTOMY is a comparatively modern pro-dure. for. although some animal experiments were one as long ago as 1890. it was not till 1911 that tuertz [1] proposed to carry out the procedure in man. n 1913 Sauerbruch [2] reported five cases in which ne operation had been done with some measure of uccess. Its effect should be paralysis of the iaphragm, but it was soon found that section of the erve frequently failed to produce this result. The ause of this remained unknown until Felix [3] and Goetze [4] in 1922 found that there was often an acces-ory phrenic nerve which pursued an independent ourse into the thorax to join the main stem.

To obtain a certain paralysis Felix proposed the operation of phrenic avulsion in which. after exposure of the nerve in the neck. it is grasped with forceps, and by traction a considerable length of it drawn out from the thorax until it finally breaks. In this way the connexion between the main trunk and its accessory branch is broken. Goetze advocated what he termed the radical operation, in which the cervical plexus is exposed and the roots of the nerve identified and cut, as well as the nerve to the subclavius and any other twigs which appear to be taking a similar course.

There are certain theoretical objections to the blind and forcible avulsion of the nerve from the thorax. It is conceivable that the nerve might be adherent to some diseased portion of the lung, and so a laceration might result. Also the tearing of other adhesions might cause hæmorrhage. In practice the danger is slight. In the event of extreme pain attending attempted avulsion it would be expedient to abandon it and carry out the operation of Goetze, but as this is technically difficult, and as excellent results are obtained by the simpler procedure, phrenic avulsion at present holds the field.

THE VALUE OF PHRENICECTOMY

Phrenicectomy has been chiefly used in pulmonary tuberculosis: in unilateral disease with a tendency to fibrosis; as a last resort in acute caseous tuberculosis; as a palliative measure in obviously incurable cases to relieve cough, vomiting, and also hæmoptysis; and as a preliminary to thoracoplasty. Many advocate it in combination with artificial pneumothorax.

Sauerbruch condemns the operation almost entirely as an individual measure, and considers that its main indication is as a preliminary to thoracoplasty. He states [5] that of 185 cases of pulmonary tuberculosis in which phrenicectomy was the sole treatment, only 15 are surviving and at work. and of these five had solitary lesions at the base. Morriston Davies,[6] who reported on 33 cases, states that 16 showed marked improvement; four of these cases were intended for thoracoplasty on account of extensive disease, but so great was their improvement after phrenicectomy that further intervention became unnecessary. Moore [7] reports that two out of ten cases are well, and five improved. Welles,[8] who reports on 271 cases, states that 174 (64 per cent.) were improved.

Of the phrenicectomies described in this report, 53 were carried out as the main therapeutic measure for pulmonary tuberculosis. It has been possible to trace 32, of whom 3 are "cured," 9 have improved, 7 are worse, and 13 have died. The series includes some recent cases which are of little value as an index of the ultimate worth of the procedure. The term "cure" is used for cases in which. in addition to general improvement, expectoration of tubercle bacilli has ceased. It is to be interpreted with caution, as one of the fatal cases spent a year in this state before a final collapse.

There have been occasional dramatic results in acute, highly febrile caseous types of tuberculosis, notably by Goetze,[9] Frisch,[10] and Brunner.[11]

All authorities are agreed that the procedure has considerable value in the treatment of such symptoms as irritative cough and vomiting. When more radical measures of pulmonary compression are not available, Davies [6] and others have had good results in cases of hæmoptysis.

Phrenicectomy can usefully be combined with artificial pneumothorax and (see Case 7 below) can be used as a preliminary measure in a patient who is too ill to bear thoracoplasty.

ITS POSSIBLE DANGERS

Sauerbruch has issued an impressive warning as to the dangers of the operation itself. He described three cases of severe hæmorrhage in which ligature of the subclavian artery was required, and two of these cases were fatal. He also mentioned the danger of air embolism and wounds of the thoracic duct. The literature contains no other record of such accidents, except that Welles [5] injured the thoracic duct in one case, but this had no serious consequences. Davies in a series of 108 cases had no fatality. The only death reported as a result of phrenicectomy, apart from purely operative complications, is by Davidson and Ledlie.[12] It was assumed that sudden compression of the base of the lung had led to general dissemination of an intense pneumococcal infection.

A SERIES OF FIFTY-EIGHT CASES

In 1926 I was working in an out-station in the Sudan where phrenicectomy appeared to be a form of collapse therapy suitable for the somewhat primitive conditions. In the absence of an X ray apparatus, air replacement or thoracoplasty was clearly impossible. Phrenicectomy merely demanded an operating theatre and some knowledge of surgical technique. The method employed was that described by Davies,[13] in which the nerve is exposed by a transverse incision as it lies on the scalenus anterior. cut, seized with artery forceps, and gradually avulsed. Anatomical variations may add difficulty—for example. the nerve at times descends vertically along the inner border of the scalene instead of pursuing its normal oblique course.

Although the patients were in many cases poor surgical material, the only local complication was a hæmatoma which delayed healing for a few days. No attempt was made to select cases suitable for cure, as even in the worst cases it was hoped to obtain some symptomatic relief. Thirty-three of the cases were followed to Jan. 31st, 1931. All these had tubercle bacilli in the sputum along with general symptoms of pulmonary tuberculosis. Five were bilateral,

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* Extract from M.D. thesis in the University of Durham.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MIDDLESEX HOSPITAL POST-GRADUATE COURSE.

MONDAY, Oct 3rd —10.15 A.M., Mr. E. W. Riches: Prostatic Obstruction with special reference to Per-urethral Operations. 11 30 A.M., Prof. Samson Wright. Some Recent Advances in Physiology and their Application to Medicine and Surgery. 2.30 P.M., Dr. G. E. Beaumont: The Modern Treatment of Pulmonary Tuberculosis (demonstration).

TUESDAY.—10.15 A M, Discussion to be introduced by Mr. E Pearce Gould: The Treatment and Results in Mal-descent of the Testicle. 11.30 A.M, Dr G. E S. Ward: Drugs in the Treatment of Heart Disease. (The course is open only to graduates of the school.)

ST. THOMAS'S HOSPITAL POST-GRADUATE COURSE.

MONDAY, Oct. 3rd.—10 A.M., Mr. W. H. C. Romanis: Diagnosis of the Acute Abdomen. 10 A.M., Dr. G. Fil [illegible] olon. 11.15 A.M., Dr. Z. [illegible] stration). 11 15 A.M., Pr [illegible] emonstration) 2 P.M., Dr [illegible] 2 P.M., Mr. C. A. R. Nitch: Surgical round.

TUESDAY.—10 A.M., Dr. H. L Tidy: Recent Work on Anæmia. 10 A.M., Mr. B. W. Williams: Recent Advances in Radiotherapy. 11.15 A.M., Dr. G. T. Hebert: Pneumothorax (demonstration). 11.15 A.M., Mr. J. M. Wyatt: Antenatal (demonstration). 2 P.M., Dr. M. A. Cassidy: Medical round. 2 P.M., Mr. B. C. Maybury: Surgical round.

WEDNESDAY.—10 A.M, Dr. J. L. Birley: Neuralgia and its Treatment. 10 A.M, Mr. R. H. O. B. Robinson: Surgery of the Chest. 11.15 A.M., Dr. H. Gardiner-Hill: Pituitary Diseases (demonstration). 11.15 A.M, Mr. Max Page: Treatment of Fractures (demonstration). 2 P.M, Mr. W. R. Bristow: Orthopædic round. 2 P.M, Dr. R. C. Jewesbury: Pædiatrics round.

THURSDAY.—10 A.M, Mr. C. A. R. Nitch: Pyelography. 10 A.M, Prof. O. L. V. de Wesselow: Diabetic Coma. 11.15 A.M, Dr. M. A. Cassidy: Orthocardiography (demonstration). 11.15 A.M., Dr. J. B. Mennell: Physicotherapeutics (demonstration). 2 P.M., Dr. J. P. Hedley: Gynæcological round. 2 P.M., Dr. J. L. Birley: Neurological round.

FRIDAY.—10 A.M., Sir Percy Sargent: Surgery of the Sympathetic Nervous System. 10 A.M., Dr. Henry Yellowlees: Diagnostic Pitfalls in Psychiatry. 11.15 A.M., Mr. P. H. Mitchiner: Treatment of Burns; Tannic Acid (demonstration). 11.15 A.M., Mr. W. G. Howarth: Throat and ear clinic. 2 P.M., Dr. J. Forest Smith: Medical round. 2 P.M., Mr. W. H. C. Romanis: Surgical round. (This course is open only to graduates of the school.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct 3rd, to SATURDAY, Oct 8th.—METROPOLITAN HOSPITAL, Kingsland-road, E. Post-graduate course in General Medicine and Surgery. All day. 10.30 A.M to 5.30 P.M. Especially suitable for general practitioners.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon course in Dermatology. Daily clinics at 2 P.M. and 6 P.M.—Lectures Tues. and Frid.—CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C. All day Clinical Course in Diseases of the Ear, Nose, and Throat. Also Operative Surgery, Peroral Endoscopy, Pathology classes (strictly limited)—GORDON HOSPITAL, Vauxhall Bridge-road, S.W. Afternoon course in Proctology. Demonstrations, operations, and lectures.—LONDON LIGHT CLINIC, Ranelagh-road, S.W. Evening demonstrations on Physical Medicine. Mon. and Wed., 8 to 9 P.M.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 4th.—5 P.M., Dr. W. Griffith. Introductory.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Morphology and Histopathology of Elementary Lesions.

GRESHAM COLLEGE, Basinghall-street, E.C.2.

TUESDAY, Oct. 4th and following three days. Sir George Newman: Health and Industry.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Oct. 4th.—4.15 P.M., Dr. R. S. Paterson: Radiological Examination of the Urinary Tract.

FRIDAY.—4.15 P.M, Dr. F. R. Ferguson: Demonstration of Medical Cases.

Vacancies

For further information refer to the advertisement columns

Belgrave Hospital for Children, 1, Clapham-road, S.W.—Two H.P.'s and H S. Each at rate of £100.

Birmingham, Little Bromwich Hospital for Infectious Diseases—Jun Asst M O. £300.

Bolingbroke Hospital, Wandsworth Common, S.W.—H S. At rate of £120.

Bradford, Royal Eye and Ear Hospital.—Jun H S £150

Brentwood, High Wood Hospital for Children—Ast [illegible] £350.

Brighton Sanatorium and Infectious Disease Hospital—Jun R. M.O. At rate of £150.

Bromsgrove, Worcestershire Mental Hospital, Barnsley H—Second Asst. M.O. £350.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £10

Central London Ophthalmic Hospital, Judd street, W C—As Surgeon.

Chester, East Lancashire Tuberculosis Colony, Barrowmore E Great Barrow.—H.P. At rate of £100

City of Lo [illegible] *of the Heart and L Victor* [illegible] of £100

Colindale [illegible] *N.W.*—Sen Ast M £500.

Coventry and Warwickshire Hospital.—Res. H S £125

Dublin, Mercer's Hospital.—Hon. Visiting Surg.; also Radiologist.

Durham County Hospital.—Second H.S £150.

East London Hospital for Children, &c., Shadwell, E—As Surgeon to Nose, Throat, and Ear Dept. Res HP [illegible]

F [illegible]

H [illegible]

H [illegible] *hill, N.W.*—H.S. At rate of £100.

Hospital for Consumption and Diseases of the Chest, Brompt S.W.—Asst. Res. M.O. At rate of £150. Three H P's H.S., and Jun. H.P. Each at rate of £50.

Hospital for Epilepsy and Paralysis, Maida Vale, W—Re M.O. and H.P. At rate of £150 and £100 respectively Also Hon. Anæsthetist.

Hospital of St. John and St. Elizabeth, 60, Grove End road, N W—Anæsthetist. £50.

Hove, Lady Chichester Hospital.—Jun. H.P. At rate of £50

[illegible] adiologist.

[illegible] H.S £125.

[illegible] At rate of £100.

[illegible] *-terrace.*—Sen. and Jun H S' [illegible] ctively.

[illegible] *Hospital.*—Hon. Gynæcological and Obstetrical Surgeon.

London County Council.—Asst. M.O £475. Asst Aurist for P.H. Dept. 34*s* 6*d*. per session. Also Temporary District M.O.'s. At rate of £156 and £150.

London Hospital, E.—Surg. First Asst. and Reg. £300

Lowestoft, St. Luke's Hospital.—Sen. Asst M.O. £500.

Manchester, Ancoats Hospital.—Asst. Pathologist £200 Also [illegible]

[illegible] *Davyhulme.*—Visiting Phys and [illegible]

[illegible] *Hospital, Pendlebury*—Res M O [illegible]

[illegible] *Hospital*—Asst. M.O. for Outpatients' Dept. At rate of £150.

Manchester, St Mary's Hospitals—Two H.S.'s for Whitworth street West Hospital. Each at rate of £50.

Medway Institution Hospital, Kent—Res. Asst M.O. £250

Metropolitan Hospital, Kingsland-road, E—Sen and Jun H.P.'s and two Cas. O.'s. Each at rate of £100.

Miller General Hospital, Greenwich-road, S.E.—Hon Surgeon to Nose, Throat, and Ear Dept.

Monmouthshire County Council—Asst. M.O £500.

Paddington Green Children's Hospital, W.—H.S. At rate of £150.

Park (Fever) Hospital, Hither Green, S.E.—Res. Med Supt £1100.

Princess Louise Kensington Hospital for Children, St Quintin avenue, W.—Hon. Asst. Surgeon to Nose, Throat, and Ear Dept.

Radium Institute, Riding House-street, W.—H S. At rate of £150.

Rotherham Hospital—H.P. £180.

Royal Army Medical Corps.—Twenty-five Permanent Commissions.

Royal Eye Hospital, St George's Circus, Southwark, S E—H S At rate of £100.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. Res O At rate of £150.

[illegible] *V*—Surgeon and Asst. Surgeon

[illegible] *Women and Children, Plaistow, E*—[illegible] M.O.'s. At rate of £175 and £120

[illegible] *th Hants and Southampton Hospital*—[illegible]

[illegible] *r Children, Sydenham, S E*—Jun Re [illegible] 20.

[illegible] *Women, South Side, Clapham Common,* [illegible] 10*s* 6*d* each attendance

[illegible] *ary*—Sen. and Jun. H.S. £200 and £150

Staff [illegible] *ary.*—H.S. and H.P. At r [illegible]

West [illegible] *ylebone road, N W*—Sen Res. H S. and Jun. H.S. At rate of £150 and £100 respectively.

West London Hospital, Hammersmith-road, W.—Hon. Anæsthetist. Also Dermatologist and Physician

Whitechapel Clinic, Turner-street, E.—Part-time Clin. Asst At rate of £150.

Winchester, Royal Hampshire County Hospital.—Hon. Ophthalmic Surgeon.

Wolverhampton, Royal Hospital—H S. to Ear, Throat, and Nose Dept. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Tynemouth (Northumberland) and Mach[illegible]lleth (Montgomeryshire)

NOTES, COMMENTS, AND ABSTRACTS

RENICECTOMY IN THE TREATMENT OF PULMONARY DISEASE *

WITH AN ANALYSIS OF FIFTY-EIGHT CASES

By LAURENCE O'SHAUGHNESSY, M.D. DURH.,
F.R.C.S. ENG.

LEGE RESEARCH SCHOLAR, ROYAL COLLEGE OF SURGEONS OF
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PHRENICECTOMY is a comparatively modern pro-dure, for, although some animal experiments were ne as long ago as 1890, it was not till 1911 that uertz [1] proposed to carry out the procedure in man. 1913 Sauerbruch [2] reported five cases in which e operation had been done with some measure of ccess. Its effect should be paralysis of the aphragm, but it was soon found that section of the erve frequently failed to produce this result. The ause of this remained unknown until Felix [3] and oetze [4] in 1922 found that there was often an accesory phrenic nerve which pursued an independent ourse into the thorax to join the main stem.

To obtain a certain paralysis Felix proposed the peration of phrenic avulsion in which, after exposure f the nerve in the neck, it is grasped with forceps, nd by traction a considerable length of it drawn ut from the thorax until it finally breaks. In this way the connexion between the main trunk and its accessory branch is broken. Goetze advocated what he termed the radical operation, in which the cervical plexus is exposed and the roots of the nerve identified and cut, as well as the nerve to the subclavius and any other twigs which appear to be taking a similar course.

There are certain theoretical objections to the blind and forcible avulsion of the nerve from the thorax. It is conceivable that the nerve might be adherent to some diseased portion of the lung, and so a laceration might result. Also the tearing of other adhesions might cause hæmorrhage. In practice the danger is slight. In the event of extreme pain attending attempted avulsion it would be expedient to abandon it and carry out the operation of Goetze, but as this is technically difficult, and as excellent results are obtained by the simpler procedure, phrenic avulsion at present holds the field.

THE VALUE OF PHRENICECTOMY

Phrenicectomy has been chiefly used in pulmonary tuberculosis: in unilateral disease with a tendency to fibrosis; as a last resort in acute caseous tuberculosis; as a palliative measure in obviously incurable cases to relieve cough, vomiting, and also hæmoptysis; and as a preliminary to thoracoplasty. Many advocate it in combination with artificial pneumothorax.

Sauerbruch condemns the operation almost entirely as an individual measure, and considers that its main indication is as a preliminary to thoracoplasty. He states [5] that of 185 cases of pulmonary tuberculosis in which phrenicectomy was the sole treatment, only 15 are surviving and at work, and of these five had solitary lesions at the base. Morriston Davies,[6] who reported on 33 cases, states that 16 showed marked improvement; four of these cases were intended for thoracoplasty on account of extensive disease, but so great was their improvement after phrenicectomy that further intervention became unnecessary. Moore [7] reports that two out of ten cases are well, and five improved. Welles,[8] who reports on 271 cases, states that 174 (64 per cent.) were improved.

Of the phrenicectomies described in this report, 53 were carried out as the main therapeutic measure for pulmonary tuberculosis. It has been possible to trace 32, of whom 3 are "cured," 9 have improved, 7 are worse, and 13 have died. The series includes some recent cases which are of little value as an index of the ultimate worth of the procedure. The term "cure" is used for cases in which, in addition to general improvement, expectoration of tubercle bacilli has ceased. It is to be interpreted with caution, as one of the fatal cases spent a year in this state before a final collapse.

There have been occasional dramatic results in acute, highly febrile caseous types of tuberculosis, notably by Goetze,[9] Frisch,[10] and Brunner.[11]

All authorities are agreed that the procedure has considerable value in the treatment of such symptoms as irritative cough and vomiting. When more radical measures of pulmonary compression are not available, Davies [6] and others have had good results in cases of hæmoptysis.

Phrenicectomy can usefully be combined with artificial pneumothorax and (see Case 7 below) can be used as a preliminary measure in a patient who is too ill to bear thoracoplasty.

ITS POSSIBLE DANGERS

Sauerbruch has issued an impressive warning as to the dangers of the operation itself. He described three cases of severe hæmorrhage in which ligature of the subclavian artery was required, and two of these cases were fatal. He also mentioned the danger of air embolism and wounds of the thoracic duct. The literature contains no other record of such accidents, except that Welles [8] injured the thoracic duct in one case, but this had no serious consequences. Davies in a series of 108 cases had no fatality. The only death reported as a result of phrenicectomy, apart from purely operative complications, is by Davidson and Ledlie.[12] It was assumed that sudden compression of the base of the lung had led to general dissemination of an intense pneumococcal infection.

A SERIES OF FIFTY-EIGHT CASES

In 1926 I was working in an out-station in the Sudan where phrenicectomy appeared to be a form of collapse therapy suitable for the somewhat primitive conditions. In the absence of an X ray apparatus, air replacement or thoracoplasty was clearly impossible. Phrenicectomy merely demanded an operating theatre and some knowledge of surgical technique. The method employed was that described by Davies,[13] in which the nerve is exposed by a transverse incision as it lies on the scalenus anterior, cut, seized with artery forceps, and gradually avulsed. Anatomical variations may add difficulty—for example, the nerve at times descends vertically along the inner border of the scalene instead of pursuing its normal oblique course.

Although the patients were in many cases poor surgical material, the only local complication was a hæmatoma which delayed healing for a few days. No attempt was made to select cases suitable for cure, as even in the worst cases it was hoped to obtain some symptomatic relief. Thirty-three of the cases were followed to Jan. 31st, 1931. All these had tubercle bacilli in the sputum along with general symptoms of pulmonary tuberculosis. Five were bilateral,

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* Extract from M.D. thesis in the University of Durham.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MIDDLESEX HOSPITAL POST-GRADUATE COURSE.

MONDAY, Oct. 3rd.—10.15 A.M., Mr. E. W. Riches: Prostatic Obstruction with special reference to Per-urethral Operations. 11.30 A.M., Prof. Samson Wright: Some Recent Advances in Physiology and their Application to Medicine and Surgery. 2.30 P.M., Dr. G. E. Beaumont: The Modern Treatment of Pulmonary Tuberculosis [illegible]

TUESDAY.—10.15 [illegible] introduced by Mr. E. Pearc[illegible] and Results in Mal-descent of the Testicle. 11.30 A.M., Dr. G. E. S. Ward: Drugs in the Treatment of Heart Disease. (The course is open only to graduates of the school.)

ST. THOMAS'S HOSPITAL POST-GRADUATE COURSE.

MONDAY, Oct. 3rd.—10 A.M., Mr. W. H. C. Romanis: Diagnosis of the Acute Abdomen. 10 A.M., Dr. G. Fildes: Radiography of the Colon. 11.15 A.M., Dr. Z. Mennell: Anæsthesia (demonstration). 11.15 A.M., Prof. L. S. Dudgeon: P.U.O. (demonstration). 2 P.M., Dr. H. L. Tidy: Medical round. 2 P.M., Mr. C. A. R. Nitch: Surgical round.

TUESDAY.—10 A.M., Dr. H. L. Tidy: Recent Work on Anæmia. 10 A.M., Mr. B. W. Williams: Recent Advances in Radiotherapy. 11.15 A.M., Dr. G. T. Hebert: Pneumothorax (demonstration). 11.15 A.M., Mr. J. M. Wyatt: Antenatal (demonstration). 2 P.M., Dr. M. A. Cassidy: Medical round. 2 P.M., Mr. B. C. Maybury: Surgical round.

WEDNESDAY.—10 A.M., Dr. J. L. Birley: Neuralgia and its Treatment. 10 A.M., Mr. R. H. O. B. Robinson: Surgery of the Chest. 11.15 A.M., Dr. H. Gardiner-Hill: Pituitary Di[illegible] 11.15 A.M., Mr. Max Page: [illegible] (demonstration). 2 P.M., Mr. [illegible] ·thopædic round. 2 P.M., Dr. R [illegible] trics round.

THURSDAY.—10 A.M., Mr. C. A. R. Nitch: Pyelography. 10 A.M., Prof. O. L. V. de Wesselow: Diabetic Coma. 11.15 A.M., Dr. M. A. Cassidy: Orthocardiography (demonstration). 11.15 A.M., Dr. J. B. Mennell: Physicotherapeutics (demonstration). 2 P.M., Dr. J. P. Hedley: Gynæcological round. 2 P.M., Dr. J. L. Birley: Neurological round.

FRIDAY.—10 A.M., Sir Percy Sargent: Surgery of the Sympathetic Nervous System. 10 A.M., Dr. Henry Yellowlees: Diagnostic Pitfalls in Psychiatry. 11.15 A.M., Mr. P. H. Mitchiner: Treatment of Burns; Tannic Acid (demonstration). 11.15 A.M., Mr. W. G. Howarth: Throat and ear clinic. 2 P.M., Dr. J. Forest Smith: Medical round. 2 P.M., Mr. W. H. C. Romanis: Surgical round. (This course is open only to graduates of the school.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 3rd, to SATURDAY, Oct. 8th.—METROPOLITAN HOSPITAL, Kingsland-road, E. Post-graduate course in General Medicine and Surgery. All day. 10.30 A.M. to 5.30 P.M. Especially suitable for general practitioners.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon course in Dermatology. Daily clinics at 2 P.M. and 6 P.M.—Lectures Tues. and Frid.—CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C. All day Clinical Course in Diseases of the Ear, Nose, and Throat. Also Operative Surgery, Peroral Endoscopy, Pathology classes (strictly limited).—GORDON HOSPITAL, Vauxhall Bridge-road, S.W. Afternoon course in Proctology. Demonstrations, operations, and lectures.—LONDON LIGHT CLINIC, Ranelagh-road, S.W. Evening demonstrations on Physical Medicine. Mon. and Wed., 8 to 9 P.M.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 4th.—5 P.M., Dr. W. Griffith: Introductory.

THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Morphology and Histopathology of Elementary Lesions.

GRESHAM COLLEGE, Basinghall-street, E.C.2.

TUESDAY, Oct. 4th and following three days. Sir George Newman: Health and Industry.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Oct. 4th.—4.15 P.M., Dr. R. S. Paterson: Radiological Examination of the Urinary Tract.

FRIDAY.—4.15 P.M., Dr. F. R. Ferguson: Demonstration of Medical Cases.

Vacancies

For further information refer to the advertisement columns

Belgrave [illegible] *Clapham-road, S.W.*—Two H.P. [illegible] of £100.

Birmingh[illegible] *ital for Infectious Diseases.*—Jun. [illegible]

Bolingbro[illegible] *Common, S.W.*—H.S. At rate of £120.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £1[illegible]

Brentwood, High Wood Hospital for Children.—As[illegible] £350.

Brighton Sanatorium and Infectious Disease Hospital.—Jun. [illegible] M.O. At rate of £150.

Bromsgrove, [illegible] *il Hospital, Barnsley H*[illegible] Second [illegible]

Cancer Hosp[illegible]—H.S. At rate of £1[illegible]

Central Lon[illegible] *ital, Judd-street, W.C.*—[illegible] Surgeon.

Chester, East Lancashire Tuberculosis Colony, Barrowmore [illegible] *Great Barrow.*—H.P. At rate of £100.

City of London Hospital for Diseases of the Heart and L[illegible] *Victoria Park, E.*—H.P. At rate of £100.

Colindale Hospital, Colindale-avenue, N.W.—Sen. Asst. M[illegible] £500.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Dublin, Mercer's Hospital.—Hon. Visiting Surg.; also Ra[illegible]logist.

Durham County Hospital.—Second H.S. £150.

East London Hospital for Children, &c., Shadwell, E.—As[illegible] Surgeon to Nose, Throat, and Ear Dept. Res. H.P. £125. Also Asst. Physician. £40.

[illegible] *pital, Kent.*—Res. Asst. M.O. [illegible] [illegible] rate of £100.

Hosp[illegible] *s of the Chest, Bromp*[illegible] [illegible] of £150. Three H.P.'s. [illegible] of £50.

Hosp[illegible] *Maida Vale, W.*—Res. M.O. and H.P. At rate of £150 and £100 respectively. Also Hon. Anæsthetist.

[illegible] *St. Elizabeth, 60, Grove End-road, N.W.*—[illegible]

[illegible] *Hospital.*—Jun. H.P. At rate of £50.

Hull [illegible]

Hunt[illegible]

Leeds [illegible] 0.

Leeds [illegible] nd Jun. H.S.'s.

Liver[illegible] Gynæcological and Obstetrical Surgeon.

London County Council.—Asst. M.O. £475. Asst. Aurist [illegible] P.H. Dept. 34*s.* 6*d.* per session. Also Temporary District M.O.'s. At rate of £156 and £150.

London Hospital, E.—Surg. First Asst. and Reg. £300.

Lowestoft, St. Luke's Hospital.—Sen. Asst. M.O. £500.

Manchester, Ancoats Hospital.—Asst. Pathologist. £200. Also H.S. At rate of £100.

Manchester, Park Hospital, Davyhulme.—Visiting Phys. and Pathologist.

Manchester, Royal Children's Hospital, Pendlebury.—Res. M.O. At rate of £125.

Manchester, Royal Children's Hospital.—Asst. M.O. for Outpatients' Dept. At rate of £150.

Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-stree[illegible] of £50.

Medway [illegible]s. Asst. M.O. £250.

Metropoli[illegible] *E.*—Sen. and Jun. H.P.'s and two Cas. O.'s. Each at rate of £100.

Miller General Hospital, Greenwich-road, S.E.—Hon. Surgeon to Nose, Throat, and Ear Dept.

Monmouthshire County Council.—Asst. M.O. £500.

Paddington Green Children's Hospital, W.—H.S. At rate of £150.

Park (Fever) Hospital, Hither Green, S.E.—Res. Med. Supt. £1100.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—Hon. Asst. Surgeon to Nose, Throat, and Ear Dept.

Radium Institute, Riding House-street, W.—H.S. At rate of £150.

Rotherham Hospital.—H.P. £180.

Royal Army Medical Corps.—Twenty-five Permanent Commissions.

Royal Eye Hospital, St. George's Circus, Southwark, S.E.—H.S. At rate of £100.

Royal London Ophthalmic Hospital, City-road, E.C.—Sen. Res. O. At rate of £150.

St. George's Hospital, S.W.—Surgeon and Asst. Surgeon.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.

Southampton, Royal South Hants and Southampton Hospital.—Hon. Clin. Asst.

South-Eastern Hospital for Children, Sydenham, S.E.—Jun. Res. M.O. At rate of £120.

[illegible] *Women, South Side, Clapham Common,* [illegible] 10*s.* 6*d.* each attendance.

[illegible] *ary.*—Sen. and Jun. H.S. £200 and £150

Staff[illegible] *ary.*—H.S. and H.P. At [illegible]

Wes[illegible] *ylebone-road, N.W.*—Sen. [illegible] rate of £150 and £100

Wes[illegible]—Hon. Anæs[illegible]

Whit[illegible] Clin. Asst. At rate of £150.

Winchester, Royal Hampshire County Hospital.—Hon. Ophthalmic Surgeon.

Wolverhampton, Royal Hospital.—H.S. to Ear, Throat, and Nose Dept. At rate of £100.

The Chief Inspector o[illegible] int-ments for Certify[illegible] uth (Northumberland) physical signs to explain the dyspnœa. There was no evidence of pulmonary œdema or collapse, but it eemed clear that although death was inevitable the ntervention had hastened its advent.

Case 3.—This patient had extensive bilateral disease, and bilateral phrenicectomy was done, a month intervening between the two operations. As in the other cases, there was an increase in respiration-rate, and the accessory muscles of respiration came into play. In a few days the respiration-rate fell to 20, the accessory muscles no longer showed activity, and quiet respiration of ntercostal type was present. The fluoroscope showed total paralysis of the diaphragm.

The operation in this case is of too recent date for assessment as a therapeutic measure. At the same time, it is of interest to note that the respiratory, circulatory, and alimentary systems continue to work normally in the complete absence of diaphragmatic function.

Case 4.—Phrenicectomy was done for a lesion in the right upper lobe; six weeks later signs appeared in the other lung, and it was decided to paralyse the diaphragm on that side. The nerve was exposed and crushed. There was no dyspnœa, but an increase in respiration-rate. On examination with the fluoroscope a high immobile diaphragm was seen.

Six months later the left diaphragm was again working, but the right half remained motionless.

This patient appears to have derived benefit but, although his condition has improved, bacilli are still present in the sputum. Temporary paralysis can only be obtained by this method in patients without an accessory phrenic nerve.

FATAL CASES

Three of my cases illustrate the danger of phrenicectomy in patients who are acutely ill.

Case 5.—This patient was admitted complaining of severe hæmoptysis. There was evidence of consolidation of the right upper lobe, and the sputum contained tubercle bacilli. The hæmorrhage was severe, and clearly threatened life. Two attempts to induce artificial pneumothorax failed, as no free pleural space could be found.

On Dec. 23rd, 1929, as a last resort, the patient being very exhausted and having air-hunger, the right phrenic nerve was avulsed. There was no immediate dyspnœa, but half an hour later this appeared and there was marked general distress. On examination there were scattered moist râles throughout the left lung, and the expectoration of pink frothy sputum showed that acute œdema of the lung was present. The usual remedies failed, and very shortly the patient died.

The following were the *post-mortem* findings: The right pleural space was largely obliterated by adhesions, but the left pleural space was free. There was consolidation of the upper lobe of the right lung, with a small central cavity. The cavity was the size of a walnut and, on removing the contained clot, erosion into a large vessel could be seen. There were scattered areas of fibro-caseous tuberculosis in the middle and lower lobe of this lung, but no evidence of œdema. The left lung showed no evidence of tuberculosis, but was completely œdematous. No portion of the organ contained any air. The other organs appeared normal except for marked engorgement of the right heart.

No case of this type has been recorded. It is impossible to explain the relation of the phrenicectomy to the development of pulmonary œdema, but equally impossible to avoid the conclusion that it was the determining factor. The absence of œdema on the operated side is remarkable, as there was enough normal tissue in the lower lobe to allow of its recognition. It is held by Dunner[14] and others that changes in the pulmonary circulation follow phrenicectomy, and the findings in this case may have some relation to his theory. Another point of interest was the site of the hæmorrhage, which was so placed in the midst of unyielding tissue that no form of collapse therapy could possibly have influenced it.

Case 6.—This woman was admitted with advanced pulmonary tuberculosis affecting both lungs. The right lung was in worse condition than the left, and the right phrenic nerve was avulsed. The operation was done in the usual way without difficulty, and the patient exhibited no sign of distress; 24 hours later there was dyspnœa of sudden onset, and examination showed that acute œdema of the lung had supervened. The physical signs were more marked in the left lung—that is, on the non-operated side. The usual remedies were applied without avail, and the patient died some hours later. An autopsy could not be obtained.

This case serves as another example of the dangers of phrenicectomy in very advanced cases, and again raises the question of its relation to the vasomotor supply of the lung.

OTHER CASES OF INTEREST

In the following case phrenicectomy was used to prepare for thoracoplasty.

Case 7.—This patient was admitted with pulmonary tuberculosis. Clinical examination and the radiographic picture showed that the disease was almost entirely confined to the right lung. The patient was in poor condition; there was profuse expectoration and marked pyrexia. The right phrenic nerve was avulsed, with almost immediate improvement.

Six weeks later the patient had gained over a stone in weight, was apyrexial, and had much less cough. It was decided to attempt more satisfactory collapse of the lung and under spinal anæsthesia a paravertebral thoracoplasty was done, portions of the upper six ribs being removed. The patient stood the operation well and his improvement continues.

It is, of course, realised that six weeks' rest and diet would tend to improve the general condition, but it seems difficult to exclude the phrenicectomy from an important share in the transformation of a sick and emaciated patient into one sufficiently robust to withstand a major surgical operation.

Occasionally some anatomical peculiarity may lead to difficulty.

Case 8.—The nerve was found in the usual site and sectioned, but on attempting to avulse it a distinct arterial pulsation was felt. Continued avulsion was clearly dangerous, and the operation was terminated. Examination with the fluoroscope showed no paralysis of the diaphragm, so that clearly an accessory phrenic nerve existed.

This type of case has been described by Davies, who believes that the phenomenon is due to a junction between the phrenic and its accessory immediately below the subclavian vein. He has devised a small ring-shaped instrument which is passed down along the course of the nerve to sever this connexion. It seems possible, however, that some aberrant artery within the chest may be concerned, in which case it would seem wiser to divide the accessory phrenic in the neck after the manner of Goetze.

Remarks

Phrenicectomy may be a useful therapeutic measure in certain cases of pulmonary tuberculosis; it may be of value in cases of chronic empyema and in fibrosis of the lung. It can offer little help in cases of bronchiectasis, and among the rarer indications for its use may be mentioned intractable hiccup and spasm of the diaphragm.

The operation in efficient hands is not dangerous, but in those gravely ill it may have serious or even fatal sequelæ, as some of the results in the above series show.

Considered as an individual measure for the cure of pulmonary tuberculosis its results are disappointing. Phrenicectomy is, after all, the least effective method of collapse therapy, but its use is possible under primitive conditions which preclude the use of the more radical measures. Its most useful indication is probably in cases which the ordinary methods of rest and diet just fail to control, when the slight and in one the phrenicectomy was supplemented by artificial pneumothorax. As a whole the results are not encouraging, as only three "cures" are reported, and the course of the next few years may remove these from this category. At the same time some of the nine cases who have improved will probably become "cures." One or two of the results were unexpectedly good, and several cases were restored to normal health for a year or more before their final relapse.

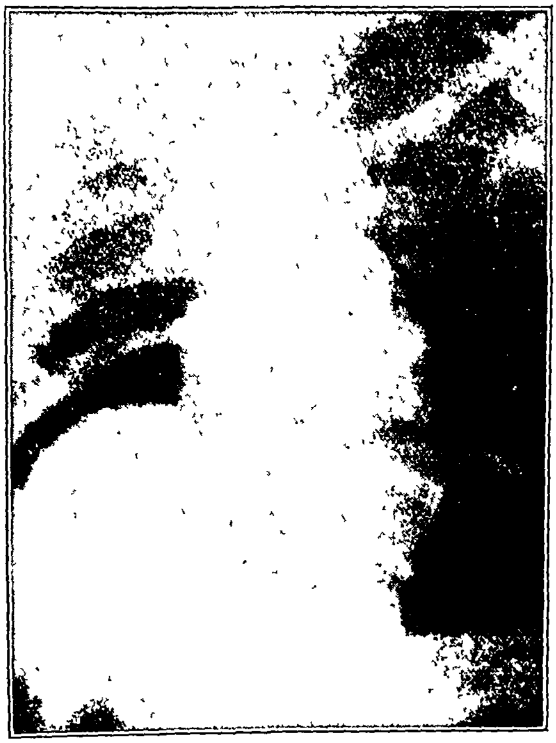
Of 23 other patients, some of whom were observed for some months, the ultimate fate is unknown. In many of these cases there was improvement in symptoms, such as irritable cough. Two cases of bronchiectasis did not benefit from phrenicectomy.

BILATERAL PHRENICECTOMY

In four cases bilateral paresis of the diaphragm was induced, and in the first of these I can give a record of the post-mortem findings a year later.

CASE 1.—A Sudanese woman of 25 years complained of cough and fever. She lived in a village on the Nile some two hundred miles south of Omdurman in a malarial district. On examination there was no splenomegaly or other evidence of malaria, but the patient was very emaciated. There was evidence of consolidation at the right apex, and scattered and persistent râles at the right base and throughout the left lung. The sputum contained tubercle bacilli.

FIG. 1



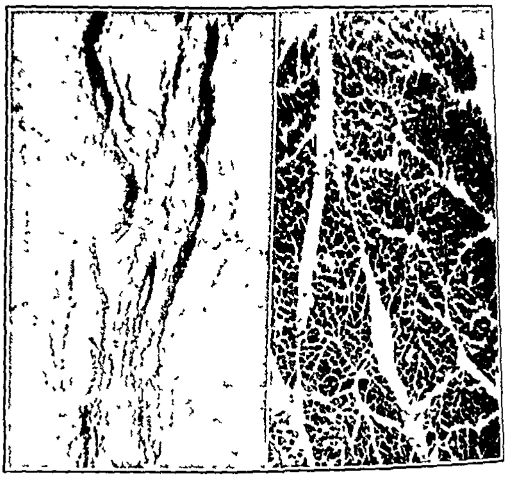
Radiogram showing high position of diaphragm after bilateral phrenicectomy (Case 1).

On August 4th, 1929, a right phrenic avulsion was done, and the fluoroscope showed a high diaphragm on the right side which exhibited paradoxical movement.

On Oct. 1st, little general improvement having occurred and signs persisting at the left base, the left phrenic nerve was avulsed. There was an immediate rise of respiration-rate to 38, the pulse became weak, and there was slight collapse. All the accessory muscles of respiration were brought into play. The acute symptoms subsided after an injection of atropine. Careful examination failed to reveal any sign of pulmonary œdema or collapse. Next day respiration was less tumultuous, and the rate had fallen to 28. The pulse was normal, and there was no alteration of physical signs in the chest.

On Oct. 15th the patient felt perfectly well and wished to leave hospital. The fluoroscope showed complete paralysis of the diaphragm (Fig. 1). The further course was one of continued improvement. She appeared to suffer no inconvenience from the loss of the activity of her diaphragm. Coughing took place normally, there was no dyspnœa even after ascending stairs, and there were no signs of impaired circulation. There was no complaint of dyspepsia, and her alimentary system functioned in every way normally. The scattered râles at both bases disappeared; the evidence of consolidation at the right apex persisted, but the encircling zone of crepitations disappeared. Two months later the sputum no longer contained tubercle bacilli and, although there had been little gain in weight, the general condition was very good. Later, her condition having further improved, she was employed as a hospital cleaner.

FIG. 2



Left: Section of diaphragm a year after phrenicectomy (Case 1).
Right: Section of normal diaphragm for comparison.

On Dec. 1st, 1930, she had a severe hæmoptysis and was readmitted to hospital. There was evidence of progressive disease in the left lung, and the lesion at the right apex appeared active. The patient became progressively worse, further hæmorrhages took place, and she died on Dec. 30th.

The following were the *post-mortem* findings: Both pleural spaces were largely obliterated by adhesions. There was extensive fibro-caseous tuberculosis throughout both lungs, with a small cavity in the right upper lobe which contained recent blood clot. There was marked atrophy of the whole diaphragm (Fig. 2). The other organs appeared normal.

It is difficult to avoid the conclusion that the course of the disease was favourably influenced by the phrenicectomy. The patient was enabled to enjoy a year of normal life, although on admission the prognosis seemed almost hopeless.

CASE 2.—Phrenicectomy was done for disease affecting the right upper lobe. There was some temporary improvement, but six months later evidence of marked disease in both lungs was found, together with tuberculosis of the larynx. The condition was clearly hopeless, but a constant irritable cough added greatly to the patient's suffering, and in the hope of alleviating this the left phrenic nerve was avulsed.

Dyspnœa and marked distress appeared as soon as the nerve was cut across, and persisted until the patient died five days later. The cough did not recur, and even voluntary coughing was impossible.

Sauerbruch has emphasised the fact that paralysis of the diaphragm, while it may allay an irritative cough, does not affect the act of voluntary coughing; in the other three cases recorded here the power of voluntary coughing was retained, but in this case it was certainly lost. There was no alteration in the

RESENT POSITION OF YMPATHECTOMY*

ELFORD, F.R.C.S. ENG., B.CHIR. CAMB.

CHESTER ROYAL INFIRMARY AND PROFESSOR OF
RGERY IN THE UNIVERSITY OF MANCHESTER

s been of late a revival of interest in the the autonomic nervous system, and the f sympathectomy is now being employed ment of many diseases. The results of interest alike to physician, surgeon, . It seems worth while, therefore, to d to attempt an estimate of the present value of the operation. The following based, in the main, on a series of 41 mies which I have performed at the Royal Infirmary and in every case I am bted to Prof. J. S. B. Stopford for his ssistance.

ssary at the outset to discuss the termin- he subject, since upon this there is ly no general agreement. The term was introduced by Winslow and implied ystem, as it was then known. Later, of the vegetative nervous system and till employed by some writers. Langley's though itself not ideal, is the one in l use at the present time. Langley the whole system as autonomic and it into the sympathetic and para- c. The former is the great thoraco-lumbar the latter the cranial and sacral outflows. tion is important as the two great outflows, sibly not so sharply defined as has been agined, are, in general, opposed to each tion.

f the various operations on the autonomic tem brings out at once the thought that lmost without exception, destructive in Langley, it is true, attempted anastomosis his researches and, more recently, Sir allance has described the experimental osis of the cervical sympathetic cord with cial and hypoglossal nerves. Beyond these loes not appear to have been any attempt at ctive surgery but the possibilities of this borne in mind in future work.

nnot avoid the thought that sympathectomy e and mutilating operation. By the operation nerely breaking one link in a chain of which ot see the beginnings, and with increasing ge the operation should become less frequent altogether disappear. Its present position t unfairly, be likened to that of thyroidectomy hthalmic goitre. If, then, our attempts aim destruction of certain portions of the autonomic n it is well, at the outset, to consider what e main functions of that system which we may to influence by ablation of the autonomic ly. These may be arranged in five main groups :—

. The control of the heart and blood-vessels.
. The control of respiration.
. The control of secretory glands.
. The control of smooth muscle of tubes and viscera.
5. The relation to visceral pain.

ch divisions are obviously incomplete, arbitrary, l tend to overlap, since a clinical result may owe its form to a combination of two or more. They are not intended to do more than to afford a convenient way of splitting up a very extensive and deeply involved subject.

The Control of the Heart and Blood-vessels

The operation of sympathectomy aims at abolishing vasoconstrictor action and it is in this group that the operation is most often performed to-day. The cases fall into two classes. On the one hand sympathectomy may be done to abolish certain noxious influences which are causing vasospasm. Here the operation has proved its value in those diseases of the blood-vessels which are characterised by continuous or intermittent spasm. On the other hand the operation may be done to produce a permanent increase in the calibre of normal and healthy vessels, so that a more abundant supply of blood may be brought to the part.

In the first class the more important lesions are Raynaud's disease, thrombo-angiitis obliterans, the vascular complications of cervical rib, and possibly retinitis pigmentosa. Of these diseases, the most clearly cut and instructive picture is afforded by the cases of cervical rib. These patients suffer from a persistent, low-grade irritation of a bundle of sympathetic fibres by friction against the rib. The result is spasm of the arteries of the limb which is evidenced by pallor and coldness of the hand. After an interval, often some twelve months, thrombosis occurs and ascends fairly rapidly up the limb to a point about the junction of the axillary and brachial arteries. Finally, gangrene of one or more fingers is seen. The picture is one of spasm followed by thrombosis and suggests that long-continued spasm of an artery will by embarrassment of the vasa vasorum lead to ill-health of the vessel wall and so to thrombosis. The histological appearances of thrombosed arteries in these cases of cervical rib correspond with those in the vessels of a fowl in which persistent spasm has been caused by repeated doses of ergot.

Many writers on the vasospastic diseases appear to regard spasm and thrombosis as quite separate conditions, and in other writings the thrombosis is envisaged as preceding the spasm. From what has been said above on the cervical rib cases it would appear that spasm and thrombosis are merely stages in the disease and that thrombosis is the result of spasm, provided always that the spasm is sufficiently severe and long-continued. The point is important because we may regard these vasospastic diseases as beginning with an area of spasm which as time goes on is encroached upon by an ever-increasing area of thrombosis. Sympathectomy can cure these cases only by abolishing spasm, but can have no conceivable effect on a vessel which is already choked by an organised thrombus ; hence if the operation is to succeed it must be done reasonably early in the course of the disease. This contention is fully borne out by the results we have obtained from sympathectomy in these diseases. Those cases in which spasm is evident give satisfactory and even brilliant results, but those cases in which thrombosis is marked, and especially those in which gangrene is threatened or actually present, give results which can only be regarded as disappointing. For example, the results in the more advanced cases of thrombo-angiitis obliterans are poor.

There is, fortunately, an easy method of discovering the relative amounts of spasm and thrombosis in any given case and this question will be discussed later.

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b tract of a presidential address to the Manchester Medical ty on Oct. 5th.

additional rest may incline the balance towards the healing side.

Phrenicectomy is of undoubted value in controlling symptoms caused by adhesions in the region of the diaphragm, and is a useful preliminary to the operation of thoracoplasty.

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COMPLEMENT-FIXATION TEST IN VULVO-VAGINITIS OF CHILDREN.

THE diagnosis of acute gonorrhœa in childhood is usually a matter of little difficulty. Not only are gonococci easily demonstrable in the direct smear, but the clinical picture is pathognomonic—dusky red coloration of the genital mucous membranes with eczematous crusting of the surrounding skin and profuse sticky yellow or green pus oozing from the vagina. The urethral orifice may also be œdematous and exude pus, and there is frequently a sharply demarcated reddened area around the anus. In the more chronic cases, however—and the disease is characterised by its chronicity—it may be much harder to distinguish between a vulvo-vaginitis of gonococcal origin and one that is due to other causes. The clinical picture is much less typical than that of the acute case, and the great number and variety of organisms present in smears and cultures may make identification of the gonococcus an uncertain procedure. It is therefore in the chronic case that additional aids to diagnosis would be appreciated. The complement-fixation test of Müller and Oppenheim is remarkably specific in the gonorrhœa of adults; T. E. Osmond and J. O. Oliver [1] in reporting 5000 tests found only 0·6 per cent. false positives and a high percentage of positives in all except very early cases. The value of the test in children is less definitely established, though in this country D. K. Brown [2] has reported favourably in a small series of cases. Alfred Fessler [3] has now examined the results of the test in a well-controlled series of cases, ranging in age from 2 months to 14 years, the majority being between 4 and 8 years old. He divides them into four groups: (I.) 50 control cases, free from vulvo-vaginitis; (II.) 20 cases with non-gonorrhœal vulvo-vaginitis; (III.) 50 cases in which gonococci were present in the vaginal secretion; and (IV.) 23 "follow-up" cases of gonorrhœa which had been treated and cured of their condition at least two years previously. Of the control groups (I.) and (II.), group (I.) showed 47 negatives and 3 weak positives, and Group II. 19 negatives and 1 weak positive. Group III. gave 31 positives, of which 13 were medium or weak positives. In Group IV. all cases that had been cured for more than three years gave negative results, while the remaining 11 cases showed 2 positives, 2 weak positives, and 7 negatives. Fessler concludes that the test is definitely valuable in the diagnosis of gonorrhœa in children, in spite of the relatively large number of weak positive reactions that occurred. The explanation of the difference between the value of this test in adults and in children may be that in children the disease tends to remain both localised and resistant to treatment, and thus the formation of antibodies is relatively poor. The author agrees with the majority of observers in regarding treatment by stock vaccines as ineffective.

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[1] Brit. Jour. Ven. Dis., 1929, v., 281.

[2] Ibid., 1930, vi., 285.

[3] Wien. Klin. Woch., 1932, xxxv., 1064.

A BOGUS SALESMAN

WE are informed by Messrs. S. Maw, Son and Sons, Ltd., of Aldersgate-street, E.C., that doctors in London and the suburbs are receiving visits from a man who purports, without authority, to represent that firm in the capacity of a travelling salesman. The man's methods are to present a card bearing the name of the firm and to take an order for medical sundries, such as labels or charts, and collect payment. He then departs and no more is heard of him. So far, we are informed, the suggested amount seems to be up to £1, but it is of course possible that he may attempt to obtain larger sums. Up to the present the field of his activities has included Shepherd's Bush, Norbury, Fulham, Whitechapel, and Acton, and he has given his name variously as O'Connor, O'Gorman, Collins, and Hayes. He is said to speak with an Irish accent.

Practitioners who receive visits from the man to whom this warning relates should be on their guard and, for the protection of others, may consider a discreet communication with the police.

REMOVABLE POCKETS

Dr. Percy Edgelow has demonstrated to us a pocket which he has devised for coat and trousers, capable of being removed, cleansed, and disinfected by boiling or otherwise, and replaced at will. Its construction is simple. Slotted tapes of fabric are attached round the edges of the entrance into the pocket itself and near the edges of the garment entrance for the pocket. A narrow strip of fabric binds the corresponding edges together by simply lacing one to the other. Dr. Edgelow has worn such pockets for some months and finds them holeproof and otherwise satisfactory. "The dirty and infected condition of the ordinary fixed pockets of garments is," he remarks, "a reflection on the progress of hygiene." And practical hygienists will agree with him.

SURBITON HOSPITAL.—Cricket matches played annually for the benefit of the hospital for the last five years between an All-England team, and a team of 18 selected from the Surbiton cricket clubs, have produced over £3000. The money has been used for the purchase of Hill Manor, Surbiton Hill, for the provision of a larger hospital.

Births, Marriages, and Deaths

MARRIAGES

COSTOBADIE—WILKINSON.—On Sept. 23rd, at the Huguenot Chapel, Canterbury Cathedral, Lionel Palliser Costobadie, M.D., F.R.C.S., of Brookfield, Folkestone, to Aileen, only daughter of Mr. and Mrs. G. B. Wilkinson, of Smallhythe, Tenterden, and Folkestone.

MACKIN Sept. 20th, at the Congregati , Dr. Alistair MacKinnon to Dr.

ORR—CARMICHAEL.—On Sept. 7th, at Windsor Presbyterian Church, Belfast, John Washington Orr, M.D., B.Sc. Belf., to Nora Margaret, second daughter of Mr. and Mrs. D. J. Carmichael, of 7, Harberton-drive, Balmoral, Belfast.

POPE—GALE.—On Sept. 24th, at Milland Church, Samuel Pope, M.D., to Charlotte Hope, youngest daughter of the late Ernest Sewell Gale, F.R.I.B.A., and Mrs. Gale, of Tile Cottage, Liphook, Hampshire.

ROSS—CUTHBERT.—On Sept. 20th, at Tron Church, Edinburgh, William Fraser Ross to Margaret Jane Mudie Cuthbert, M.A., M.B., Ch.B., Sheen-road, Richmond, Surrey.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

tion. This sudden and complete cessation of tempts one, at first, to think that an afferent way has been abolished, but the true explanation doubt that given by Lewis. The pain of vascular se is due to the retention in the tissues of the ucts of muscular action and when these are pt away by the improved circulation the pain es. This contention is in accord with our observa- that in severe cases of thrombo-angiitis obliterans much thrombosis the pain and claudication may be lost because the sympathectomy has not given fficiently marked improvement in the circulation.

ome Italian surgeons have reported the value of pathectomy of the renal pedicle in cases of pain the kidney due to no ascertainable cause, and in s country J. B. Oldham has reported a number of ourable results.

Resection of the presacral nerve has been practised ry extensively by French and Italian surgeons for e relief of pain due to various pelvic lesions. These lude dysmenorrhœa and inoperable growths not volving the sacral plexus. The resection of the esacral nerve has been done on many occasions in is country, but the operation has, to say the least, t been received with the enthusiasm which marks ntinental writings. Although the results have casionally been very good and even dramatic, the peration must be regarded at present as experimental. uch work will need to be done before its value can e established; neither its rationale nor its precise dications are as yet clear.

Lastly, it is much to be regretted that the claims hich were made for sympathectomy in the spastic have not been established. In this connexion made many observations on the muscular condition of the limbs in sympathectomised patients. We have never encountered any suggestion of altered function, nor have we been able to note by ordinary clinical tests any difference from the normal in these patients.

Preliminary Tests of the Value of the Operation

In the majority of the diseases in which sympathectomy is being considered as a line of treatment, it is possible to obtain an exact forecast of the extent to which the operation will succeed. In cases in which the objective is to produce vasodilatation, the degree to which this change is possible can be ascertained beforehand either by the induction of fever or by nerve block. The former method depends upon the induction of fever by the injection of foreign proteins; the latter consists in a temporary interruption of sympathetic fibres by either spinal anæsthesia or local nerve block. These methods have been described by several writers and they should, in one or other form, be always done before deciding on sympathectomy. The observations on surface temperature will yield an accurate measure of the extent to which the disease is due to spasm and the extent to which collateral vessels may be enlarged by sympathectomy.

Similarly, in cases of Hirschsprung's disease, a barium enema given under spinal anæsthesia will give valuable information as to the possibility of shrinkage in the affected bowel after sympathectomy.

The Type of Operation

The present account is not concerned with the technique of the operation, but the type of procedure calls for some mention. In diseases of the extremities the perivascular sympathectomy should not be done because, valuable as it has been in pointing the way, it is in these cases incomplete and anatomically unsound. It is, however, retained in some abdominal sympathectomies—e.g., of the renal and inferior mesenteric arteries—though here it is open to the objection that it destroys sympathetic and parasympathetic alike. Ramisectomy, as inflicting the minimum of damage, would be the ideal operation but for the fact that the anatomy of the autonomic system is very variable and our knowledge of it far from complete. It is best, therefore, to do too much rather than too little and, at present, the extensive removal of cord and ganglia gives the best chance of success.

The Permanency of the Results

It is very commonly objected that the results of sympathectomy are merely temporary and that relapse is common. That this is true of some cases there can be no doubt, but the explanation will be found to lie in the inadequate removal of tissue. For example, perivascular sympathectomy is quite inadequate in the limbs. But the main reason for relapses and incomplete results lies in the very complicated and variable anatomy of the ganglia and rami.

In this respect there is a difference between the upper and lower extremities. From our experience we believe that a radical removal of the lumbar sympathetic cords, together with the second, third, and fourth ganglia on each side, gives a complete and permanent result in the lower extremities. In the upper limb the results are not so consistently good and complete. This is due to the very great variation in the arrangement of the lowest cervical and first two dorsal ganglia with their associated rami. Drawings made from dissections of 25 subjects by Dr. Donal Sheehan in the Department of Anatomy at Manchester show a variability so extreme that scarcely two subjects are alike. The cause of failure and relapse in the upper limb is, beyond doubt, inadequate operative removal.

It is much to be desired that all material removed by operation be very carefully examined. Reports on this aspect of the subject are few and scanty. Fibrosis of the cord and ganglia, with degenerative changes in the cells, have been described. In a large series we have found these same changes, but when these specimens are contrasted with a series of presumably normal cords and ganglia the differences are not great. It is evident that the normal appearances show great variation, particularly in the amount of fibrous tissue, and further work on the minute structure of the human autonomic system, especially in relation to the effect of age, is much needed. Even if these changes in the cords removed at operation be established, we are still in the dark as to what is causing them, and in this respect the recent work on the discovery of a higher controlling centre for the autonomic system is of great and hopeful significance.

Hesse gives a very full account of the many conditions and diseases for which sympathectomy has been practised up to the year 1930. To read the number and variety of these adventures is to realise why sympathectomy is suspect and has a past to be lived down. It is most earnestly to be hoped that the present revival of the operation will be based on sound anatomical and physiological foundations. If this be granted, sympathectomy will certainly take its place as a distinct advance in the treatment of some chronic and hitherto intractable diseases. It will find its place the sooner if it is done early in the history of the case. It should not, as is too often the case at present, be regarded as the last and desperate resource.

Whilst sympathectomy is amply justifying itself in the vasospastic diseases, its history has not been so fortunate when we come to the heart itself. On the assumption that angina pectoris depends upon spasm and occlusion of the coronary arteries its treatment by sympathectomy would be rational, in that it is based on the same reasons as weigh with us in claudication of the limbs. The operation has, however, given such variable and often [illegible], that it has not found favour wi[illegible]. The difficulties are great and arise mainly from the complex pathways of supply and from the uncertainty as to how far the coronary vessels are narrowed by spasm or choked by atheroma. For this latter condition, always the more probable, sympathectomy can do nothing.

The second class of case in which sympathectomy affords good hope of relief or cure comprises many and varied diseases. The factor common to all is that good may be done by producing a vasodilatation and so bringing more blood to the part. This class includes conditions such as chronic ulcers, neuroparalytic keratitis, and the blue chilblained limbs of anterior poliomyelitis.

There is one type of case in which we have found sympathectomy to yield very good results. The patient, usually a young woman, suffers from poor circulation, particularly in the lower extremities. Such a condition is, of course, common and is usually of no great moment, but in a few instances the condition is so extreme as to cause persistent weakness and aching of the limbs with chilblains and indolent ulcers, so that the patient is badly crippled. We have found that lumbar sympathectomy will give excellent results in these cases; the patients are restored to a full active life.

Another direction in which the operation may have a promising future is in the treatment of certain cases of chronic infective (rheumatoid) arthritis. Reported cases tend to show that in those [illegible] benefit distinctly by the temporary [illegible] caused by the application of heat or counter-irritants, the operation of [illegible] of much use.

There is also t[illegible] cases known as scleroderma and sclerodactyly. In our experience sympathectomy is of real value in these conditions. It is astonishing to see how quickly the skin begins to return to a loose, supple, and natural state. But it is essential that the operation be done early before very gross changes have set in. We have found the result disappointing where advanced changes are present in the skin with contractured fingers deformed by persistent ulceration of the pulp.

The Control of Respiration

Sympathectomy has been very extensively done in the past for asthma and in view of the spasm seen in many cases the procedure would appear to be reasonable and hopeful. Unfortunately the results have not proved good and a survey of the literature leads one to the conclusion that the operation must, in the present state of our knowledge, be regarded as not worth while.

The Control of Secretory Glands

One of the great functions of the autonomic nervous system is to control the glands, both of internal and external secretion. The power to regulate the secretion of a gland should be of great help in the treatment of some diseases, but unfortunately it has not been possible to use this weapon, save in a very few cases.

Sympathectomy for hyperthyroidism has been done very extensively but has deservedly dropped out of use; obviously it is based on false pathology. [illegible] Hesse reports success from sympathectomy in cases of profuse salivation due to over-activity of the parotid gland.

At present the main scope of sympathectomy in this group appears to be in the treatment of excessive sweating. Some cases of cervical rib show this symptom and it is interesting to note that it disappears at once when the frictional irritation of sympathetic fibres is brought to an end by removal of the rib. In some cases of the Raynaud type sweating may cause serious inconvenience, especially in the lower extremity.

I have had a male patient with attacks of coldness and pallor in both feet in whom the amount of sweat gave rise to serious disability; the skin of the soles became sodden, [illegible] that the man was confined to [illegible] at once stopped the sweating; [illegible] skin was normal; the man is now doing his full work.

Control of Smooth Muscle of Tubes and Viscera

Broadly speaking the parasympathetic is the motor and the sympathetic the inhibitory nerve for the smooth muscle of the body.

The action of the vagi on the stomach has long been known and some surgeons have attempted the treatment of gastric ulceration by section of these nerves. Good results have been claimed and, in this respect, J. Beattie's observation that stimulation of a higher centre in the floor of the third ventricle produces increased motility of the stomach and increases acidity of its juice is of great interest. Some of Beattie's animals died from peritonitis due to the perforation of acute ulcers and this observation will have to be taken into account in the vexed question of the ætiology of gastric and duodenal ulceration.

It has long seemed probable that conditions such as "congenital" pyloric stenosis and "congenital" megacolon owe their origin to sympathetic and parasympathetic imbalance. The treatment of Hirschsprung's disease by sympathectomy is giving good results, provided it is done at an early age before gross and irrecoverable changes have taken place in the wall of the gut.

It is an easy step from the treatment of megacolon to that of obstinate constipation. R. H. Boggon, working under Sir Percy Sargent, has recently reported five cases in which good results have followed sympathectomy and has given a list of indications for the operation. It is, of course, a common observation that after a lumbar sympathectomy has been done for some other condition the bowel action will show some improvement.

J. R. Learmonth has recently drawn attention to the use of sympathectomy in certain lesions of the urinary bladder. The sympathetic supply to the bladder which passes along the presacral nerve is inhibitory or "filling" in its action, whilst the parasympathetic supply, derived from the sacral routes, is motor or "emptying" in function. In some lesions, low down in the cord, imbalance results and causes retention. This condition has received the name of "the cord bladder" and such cases have been successfully treated by resection of the presacral nerve.

The Relation to Visceral Pain

Relief of pain is often one of the most striking and gratifying results of sympathectomy. Patients who are worn out with the pain of vasospastic diseases usually experience complete relief and will often fall into an unbroken sleep for many hours after the

20 of the powder—a level teaspoonful—to an ounce varm water). This usually caused no additional pain, act, when coagulation commenced, what pain there disappeared; if, by chance, the patient did complain, eaker solution was used at the beginning. When a white gulum formed, gauze soaked in the solution was laid over burn and a bandage applied. Next day the gauze was stened with the solution and carefully removed, but re the lowest layer was firmly adherent it was in position. More of the solution was then painted and allowed to dry before the dressing was replaced. the third or fourth day the crust was reinforced painting on collodion mixed with an equal part tannic acid in ether; if the crust was not dry this sometimes painful. On the fifth day this was repeated, in about a fortnight the crust peeled off. If a piece of crust was separated, as happened not infrequently even en great care was taken, we covered the small raw area h a single layer of gauze and painted it over with the lodion mixture.

We believe this third method will be found to have widest application. No anæsthetic is needed, le pain is felt, and it has all the advantages of the nic acid treatment of severe burns in the wards. suspending the use of the water solution on the rd day, and by strengthening the crust with collo- on, the chance of the affected area becoming moist ien covered with a dressing is considerably minished. To what this effect is due is an interesting oblem. When the crust is covered with collodion aporation is diminished, and one would expect more softening than before. In our cases the opposite has occurred, which leaves one to doubt whether evaporation from the surface is as important a factor as was at one time thought. A mild degree of sepsis arising from the edge of the crust where it is rubbed by a dressing and in contact with skin which cannot be quite sterile may perhaps be the sole cause of this softening. When a layer of collodion is added to the crust itself and the skin around it, more protection is afforded at the edge, the dressing slides more easily over its surface, mechanical damage to the crust is less likely to occur, and organisms are thus unable to gain a hold.

For the treatment of small burns at home the collodion can be omitted, and it is only necessary to cut away the blisters with a clean pair of scissors, to apply a dressing soaked with tannic acid in water, and to change this daily for the first few days. The moist dressing may be changed for a dry one on the second day if all the raw area is covered by a crust; if a piece of the crust is torn off by accident a moist tannic acid dressing may have to be replaced for 24 hours.

ADDITIONAL CONSIDERATIONS

1. In the *first-aid treatment* of burns and scalds it seems probable that much benefit might result if aqueous tannic acid (5 per cent.) were used in every case. The only materials needed would be a small packet of powder (grs. 20) from which a fresh solution is prepared with the greatest ease at a moment's notice, and a strip of clean gauze. Pain would be relieved, the formation of a coagulum ensured without delay, and the chances of sepsis reduced.

The use of oily substances as first-aid treatment is to be deprecated, because they have to be cleaned away under an anæsthetic before tannic acid is applied. It is said that they interfere with subsequent tannic acid treatment, but in our series carron oil, butter, liquid paraffin, and machine oil were used by different patients before they came to hospital, and in every case, after thorough cleansing (under anæsthesia) with ether, in which these oily substances *are soluble*, the tannic acid formed a satisfactory coagulum.

2. *Delay between the accident and commencement of treatment* is said to influence adversely the action of tannic acid, but in our series this factor has not been prominent; after delays of from three to nine days the burns are always infected, but with thorough cleansing under general anæsthesia, and the use of tannic acid, many painful dressings have been eliminated and healing has been rapid.

3. The *degree of the burn* or scald is a factor of importance. First degree burns—showing only redness of the skin, using Dupuytren's classification—may need no special dressing. Burns of the second degree, when a blister is formed without involving the dermis, or of the third degree, with partial destruction of the dermis (leaving the hair follicles intact)—the commonest types of burns and scalds—any one of the methods here described may be used, the last being most often suitable. Those of the fourth degree, with the whole dermis destroyed, may be treated in the same way if small enough to be dealt with in the out-patient department; but in this case treatment is prolonged because a granulating surface is left when the crust comes off at the end of two or three weeks, and this has to be covered in course of time by epithelium growing from its edge.

4. *Local anæsthesia* was employed in nine cases, all small burns 4×3 in. in diameter. 4 per cent. novocain was either injected into the blister, painted on the raw surface, or infiltrated around the burn. It was useful in old persons, and when general anæsthesia was refused when small burns were very dirty and needed thorough cleansing.

5. A *scrubbing brush* is often recommended for cleaning up the burned area. We used one in our earlier cases but have since given it up, as we found to our surprise that those cases healed the quickest which were treated under local anæsthesia, when no scrubbing brush had been used in consideration for the feelings of the patient. Much bleeding, such as follows vigorous scrubbing, tends to raise the coagulum above the surface of the burn with the collection of fluid between the two.

6. It is important that a *fresh solution* of tannic acid in water should be made up every time it is required, as reduction to gallic acid occurs after a few days.

7. *Solutions stronger than 5 per cent.* are said to irritate the skin and even to cause sloughing in delicate tissues. We find that a 5 per cent. solution has no injurious effect on the burn itself or on the skin round it.

8. We now use a *soft camel-hair brush* ¾-inch wide instead of a spray. If bleeding or serous exudation be free and a spray is used, it is the surface of the blood or serum which is coagulated and fluid collects beneath. With a brush such exudates are wiped away, allowing the tannic acid direct access to the surface of the burn. One brush lasts a long while—e.g., we have used only two for all our cases and both remain in good condition. After use they are cleaned in ether soap and boiled, stored dry, and before use boiled again. With burns and scalds of the face, the eyes and nostrils have to be carefully protected from tannic acid, and a brush is found to be more convenient than a spray.

9. *Adequate splinting* is almost invariably needed for burns involving hands, elbows, and ankles. A plaster-of-Paris bandage, folded on itself to form a "slab" and fixed with a bandage, is easily applied to limbs of any size or shape.

10. A great deal of the success of treatment depends on the care with which the *second dressing* is done. With the larger burns half an hour or more

THE TREATMENT OF BURNS IN OUT-PATIENTS WITH REINFORCED TANNIC ACID DRESSINGS

BY J. H. HUNT, B.M. OXF.

AND

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IN the out-patient department of a hospital, and also in general practice, burns and scalds frequently prove difficult and disappointing to treat. Regarded at first so often as comparatively trivial injuries, they are found to require painful daily dressings, which cause considerable distress and anxiety to the patient. This *pain* and the almost inevitable *sepsis*—with extra damage to tissues, delayed healing, and ugly scarring—are the factors which make small burns so formidable, especially in young children; much relief should be felt by patients, doctors, and nurses alike if a method of treatment could be found in which these two factors are reduced to a minimum.

The excellent articles of E. C. Davidson, W. C. Wilson, and others, to which references are given at the end of this paper, clearly set forth the principles involved and the methods employed in the tannic acid treatment of burns which are serious enough for the patient to be admitted into hospital. Little, however, has been written on the application of this method to the treatment of out-patients, and the results recorded are not always encouraging.

For the treatment of burns in general, tannic acid possesses several outstanding advantages over other substances. As a powder it is easily stored or carried about. It dissolves readily in water. It is excellent as a first-aid dressing, since it diminishes pain and is antiseptic. When the patient can be confined to bed, Davidson's treatment consists in thorough cleansing of the burned area; cutting away all the blistered skin; the application of gauze dressings soaked in a solution of tannic acid in water; the removal of these dressings after 24 hours and exposure of the tanned surface to air and radiant heat. A modification of Davidson's method was introduced by Beck and Powers, who used a spray for applying the solution, the spraying being repeated at intervals during the first 24 hours. The crust forms a protective covering for the burned area, and in it are fixed those products of tissue-breakdown to the absorption of which the toxæmia following burns is due. Pain is relieved, sepsis eliminated, and healing takes place quickly; in ten days to a fortnight the crust peels off, exposing new skin beneath. It has been found that if the crust is covered with a bandage and not exposed to the air it soon becomes moist and soft, the toxins are dissolved out of its deep surface and absorbed, and sepsis usually follows.

With a small burn a single preliminary dressing is needed and the patient has to be sent home. Here lies the difficulty; to form a thick crust at a single dressing and to prevent this crust becoming soft under a bandage. Reinforcement of the crust suggested itself as a possible way out of the difficulty.

METHODS TRIED

Over a period of six months in the out-patient department of St. Bartholomew's Hospital, 63 cases of minor burns have been treated with reinforced tannic acid dressings, the progress of each case being closely followed.

Three modifications of the method have been tried, as it was hard to foretell the treatment most suitable for different types of patients, of different ages and occupations, with burns and scalds produced in different ways, of different degrees of severity and extent, in different parts of the body, and seen at different periods after the accident. The oldest patient in our series was a woman of 73, and the youngest a child of 18 months; the burns have been situated on the face, shoulders, chest, back, arms, legs, hands, and feet, and have varied in size from 2 × 1½ in. to 12 × 6 in. The majority have been scalds from boiling water, milk, or tea; but high-voltage electric current, molten wax, hydrofluoric acid, salad dressing, and boiling beer have entered the list. The interval between the time of the accident and the commencement of treatment varied from half an hour to ten days.

The three methods we tried were: (*a*) tannic acid in ether reinforced with gauze; (*b*) tannic acid in ether reinforced with gauze and collodion; (*c*) tannic acid in water reinforced (on the third day) with collodion.

(*a*) *Tannic acid in ether reinforced with gauze.*—Under general or local anæsthesia, the area around the burn and the burned surface itself were cleaned with spirit, blistered skin cut away, and a saturated solution of tannic acid in ether (2½ per cent.) painted on with a soft camel-hair brush until a white coagulum formed. A thin layer of gauze was then laid over this so as to overlap its edges, covered with more gauze soaked in the tannic acid solution, and a bandage applied. Two days later the gauze was lifted off, leaving one layer still in contact with the raw area; the edge of this lowest layer was usually black and hard, its centre still yellow and moist. Strips of gauze, soaked in the same solution, were again laid on, the patient being warned that this would be painful for a moment or two. On the fourth and fifth days, if the centre of the gauze was still moist, more of the solution was again used; if dry, only a spirit dressing was needed, and the patient did not attend for a week. On the 12th to the 16th day the layer of gauze peeled off without pain, exposing new pink skin underneath. This was hardened with spirit for two days before all dressings were discarded.

We find this method excellent when the burns are extensive and dirty, when oil or grease has been used as a first-aid dressing, or when there has been a delay of more than 24 hours after the accident, for these conditions necessitate thorough cleansing with ether and ether soap, which must be done under an anæsthetic.

(*b*) *Tannic acid in ether, reinforced with gauze and collodion.*—Under local or general anæsthesia the burned area and its surroundings were cleaned as before, and painted with tannic acid in ether until a coagulum began to form. To the tannic acid in ether an equal quantity of collodion was then added and the painting continued. Over the coagulum a thin layer of gauze was laid, fixed in position with more of the solution, and, when this was dry, covered with a dressing. Next day all dressings were removed except the lowest layer of gauze, which was now adherent; and more of the mixture painted on—painful for a moment. On the third day this was repeated, usually without pain. After about 14 days the reinforced crust peeled off, leaving a dry, healed surface.

This second method is satisfactory in clean cases where other circumstances call for an anæsthetic—e.g., in nervous patients and young children. The extra strong crust resulting from the combined effect of gauze and collodion is especially suitable in children, who are always restless and in whom adequate splintage is difficult.

(*c*) *Tannic acid in water reinforced, on the third day, with collodion.*—Without an anæsthetic, the skin around the burn was cleaned with spirit, avoiding the raw area, blisters cut away, and the burn itself carefully painted with a fresh 5 per cent. solution of tannic acid in water (grs. 20 of the powder—a level teaspoonful—to an ounce of warm water). This usually caused no additional pain, in fact, when coagulation commenced, what pain there was disappeared; if, by chance, the patient did complain, a weaker solution was used at the beginning. When a white coagulum formed. gauze soaked in the solution was laid over the burn and a bandage applied. Next day the gauze was moistened with the solution and carefully removed, but where the lowest layer was firmly adherent it was left in position. More of the solution was then painted on and allowed to dry before the dressing was replaced. On the third or fourth day the crust was reinforced by painting on collodion mixed with an equal part of tannic acid in ether; if the crust was not dry this was sometimes painful. On the fifth day this was repeated, and in about a fortnight the crust peeled off. If a piece of the crust was separated, as happened not infrequently even when great care was taken, we covered the small raw area with a single layer of gauze and painted it over with the collodion mixture.

We believe this third method will be found to have the widest application. No anæsthetic is needed. little pain is felt, and it has all the advantages of the tannic acid treatment of severe burns in the wards. By suspending the use of the water solution on the third day, and by strengthening the crust with collodion, the chance of the affected area becoming moist when covered with a dressing is considerably diminished. To what this effect is due is an interesting problem. When the crust is covered with collodion evaporation is diminished, and one would expect more softening than before. In our cases the opposite has occurred, which leaves one to doubt whether evaporation from the surface is as important a factor as was at one time thought. A mild degree of sepsis arising from the edge of the crust where it is rubbed by a dressing and in contact with skin which cannot be quite sterile may perhaps be the sole cause of this softening. When a layer of collodion is added to the crust itself and the skin around it, more protection is afforded at the edge, the dressing slides more easily over its surface, mechanical damage to the crust is less likely to occur, and organisms are thus unable to gain a hold.

For the treatment of small burns at home the collodion can be omitted, and it is only necessary to cut away the blisters with a clean pair of scissors, to apply a dressing soaked with tannic acid in water, and to change this daily for the first few days. The moist dressing may be changed for a dry one on the second day if all the raw area is covered by a crust; if a piece of the crust is torn off by accident a moist tannic acid dressing may have to be replaced for 24 hours.

ADDITIONAL CONSIDERATIONS

1. In the *first-aid treatment* of burns and scalds it seems probable that much benefit might result if aqueous tannic acid (5 per cent.) were used in every case. The only materials needed would be a small packet of powder (grs. 20) from which a fresh solution is prepared with the greatest ease at a moment's notice, and a strip of clean gauze. Pain would be relieved, the formation of a coagulum ensured without delay, and the chances of sepsis reduced.

The use of oily substances as first-aid treatment is to be deprecated, because they have to be cleaned away under an anæsthetic before tannic acid is applied. It is said that they interfere with subsequent tannic acid treatment, but in our series carron oil, butter, liquid paraffin, and machine oil were used by different patients before they came to hospital, and in every case, after thorough cleansing (under anæsthesia) with ether, in which these oily substances are soluble, the tannic acid formed a satisfactory coagulum.

2. *Delay between the accident and commencement of treatment* is said to influence adversely the action of tannic acid, but in our series this factor has not been prominent; after delays of from three to nine days the burns are always infected, but with thorough cleansing under general anæsthesia, and the use of tannic acid, many painful dressings have been eliminated and healing has been rapid.

3. The *degree of the burn* or scald is a factor of importance. First degree burns—showing only redness of the skin, using Dupuytren's classification—may need no special dressing. Burns of the second degree, when a blister is formed without involving the dermis, or of the third degree, with partial destruction of the dermis (leaving the hair follicles intact)—the commonest types of burns and scalds—any one of the methods here described may be used, the last being most often suitable. Those of the fourth degree, with the whole dermis destroyed, may be treated in the same way if small enough to be dealt with in the out-patient department; but in this case treatment is prolonged because a granulating surface is left when the crust comes off at the end of two or three weeks, and this has to be covered in course of time by epithelium growing from its edge.

4. *Local anæsthesia* was employed in nine cases, all small burns 4×3 in. in diameter. 4 per cent. novocain was either injected into the blister, painted on the raw surface, or infiltrated around the burn. It was useful in old persons, and when general anæsthesia was refused when small burns were very dirty and needed thorough cleansing.

5. A *scrubbing brush* is often recommended for cleaning up the burned area. We used one in our earlier cases but have since given it up, as we found to our surprise that those cases healed the quickest which were treated under local anæsthesia, when no scrubbing brush had been used in consideration for the feelings of the patient. Much bleeding, such as follows vigorous scrubbing, tends to raise the coagulum above the surface of the burn with the collection of fluid between the two.

6. It is important that a *fresh solution* of tannic acid in water should be made up every time it is required, as reduction to gallic acid occurs after a few days.

7. *Solutions stronger than 5 per cent.* are said to irritate the skin and even to cause sloughing in delicate tissues. We find that a 5 per cent. solution has no injurious effect on the burn itself or on the skin round it.

8. We now use a *soft camel-hair brush* ¾-inch wide instead of a spray. If bleeding or serous exudation be free and a spray is used, it is the surface of the blood or serum which is coagulated and fluid collects beneath. With a brush such exudates are wiped away, allowing the tannic acid direct access to the surface of the burn. One brush lasts a long while—e.g., we have used only two for all our cases and both remain in good condition. After use they are cleaned in ether soap and boiled, stored dry, and before use boiled again. With burns and scalds of the face, the eyes and nostrils have to be carefully protected from tannic acid, and a brush is found to be more convenient than a spray.

9. *Adequate splinting* is almost invariably needed for burns involving hands, elbows, and ankles. A plaster-of-Paris bandage, folded on itself to form a "slab" and fixed with a bandage, is easily applied to limbs of any size or shape.

10. A great deal of the success of treatment depends on the care with which the *second dressing* is done. With the larger burns half an hour or more

may be required to remove the gauze, layer by layer, and even thread by thread, when it sticks to the crust. If handling be rough this crust may be pulled right off in places, and every precaution should be taken to avoid this. Rather than run this risk it is often better to leave the lowest layer of gauze in position and to treat it thereafter as part of the crust.

SUMMARY

In this series of 63 consecutive cases a modification of the recognised tannic acid method has been used for the out-patient treatment of burns and scalds.

If the crust formed by the recognised method is covered with a dressing and bandage it tends to soften, become septic, and detached. The difficulty has been overcome in this series of cases by reinforcement of the crust, either with a thin layer of gauze, gauze and collodion, or collodion alone. The results have been very encouraging, especially in those burns of the face and hands which often give so much trouble. Details of the three methods are given.

In the majority of second and third degree burns the method of choice, and one that reduces pain and sepsis to a minimum, is to paint the burned area with a 5 per cent. solution of tannic acid in water, and apply a dressing soaked in the same solution. No anæsthetic is required. Next day when the dressing is removed the burn will be found covered with a thin brown crust, and the dressing is repeated. On the third and fourth day this crust is reinforced with collodion. The surface then remains hard and dry and the crust separates towards the end of the second week, exposing the new epithelium which has grown beneath it.

For the first-aid treatment of all burns and scalds a plea is made for the use of dressings soaked in a 5 per cent. solution of tannic acid in water (grs. 20 of the powder to an ounce of warm water).

Vigorous cleaning and scrubbing are avoided, as we find these do more harm than good.

The tannic acid solution is applied with a soft camel-hair brush (¾ in. wide) instead of a spray.

Softening of an ordinary tannic acid crust, when covered up, is usually thought to be due to diminished evaporation from its surface. This series of cases rather suggests that evaporation plays but little part, and that the softening is nearly always due to sepsis following mechanical damage, from the rubbing of a dressing. The effect of reinforcement is entirely mechanical. The strengthening is most essential at the edge of the crust where it is in contact with skin and its organisms; here it is that separation first occurs from the friction of dressings and organisms first gain a hold. The agents used for reinforcing the crust all help to prevent this separation at the edge, and it is to this, we believe, the beneficial effect of reinforcement is due.

Our thanks are due to Prof. G. E. Gask and Sir Charles Gordon-Watson for permission to publish these cases, and to the sisters and nurses in the surgery of St. Bartholomew's Hospital for their help.

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THE ÆTIOLOGY OF BREAST CANCER

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Among the most lowly carcinogenic agents for the epithelium of mice that we have utilised are oleic acid and some of the almost completely saturated mineral oils. It is the action of these substances, and especially the former, that we wish to discuss here. Their carcinogenic potency is such that they affect relatively little the surface and follicular epithelium, rarely inducing more than a hyperplasia; and they never excite the surface epithelium to do more than form a benign tumour, so far as our experience goes. Their action is, however, not always so benign on the sebaceous cells, and we have specimens of malignant sebaceous adenomas of mice induced as a result of their continuous applications.

A commonly observed morphological change in the skin of animals painted with carcinogenic agents is related to the sebaceous cells, and it did not escape the notice of the pioneers working with tars that sebaceous cell atrophy almost always followed their use. The most potent carcinogenic agents do not necessarily induce the greatest degree or the most rapid sebaceous cell atrophy. Most agents being a mixture of variable chemical constituents embodying both carcinogenic and non-carcinogenic compounds, some of the latter may act detrimentally on the sebaceous cells as well as the former. Among the various agents which we have utilised we have found that they have a decreasing toxic influence in the following order, the toxic gradually being replaced by a stimulating influence.

SOME CARCINOGENIC AGENTS

1. Ordinary *coal-gas tars* are the most toxic substances we have tested for the sebaceous cells, and continual application of them invariably leads to complete atrophy of the sebaceous glands in a relatively short space of time.

A few applications given over a short interval or an occasional application from time to time may, however, induce a sebaceous cell hyperplasia. Similarly an extremely dilute gas tar may either have no influence on them or may induce a hyperplasia, and even a tumour. Thus the substances which are influencing the sebaceous cells have apparently a mode of action similar to those influencing the cells of the surface epithelium. When concentrated there is destruction, somewhat weaker there is formation of malignant tumours, still weaker we have benign tumours only, and if we continue to dilute our agent hyperplasia only results, and eventually, when using an extremely dilute agent, one can detect no change at all in the sebaceous cells, which appear normal in all respects.

2. The very much more highly carcinogenic *synthetic tars* are far less toxic to the sebaceous cells than are coal-gas tars.

Often their detrimental effect upon the sebaceous cells is by no means obvious. It is probable that in coal-gas tars there are substances which are poisonous for the delicate sebaceous cells but without palpable influence on the more sturdy cells of the surface epithelium, and that the true carcinogenic compounds in both types of tar act similarly on sebaceous and surface epithelial cells of the skin. While the mechanism of the action may be similar it is evident that the degree of action is not the same; a concentration of carcinogenic compounds which may excite malignant new growths of the surface epithelium will probably cause a certain amount of sebaceous cell atrophy, while a concentration sufficient to lead to a malignant sebaceous cell tumour we should expect to leave the surface and follicular epithelial cells more or less unaffected.

3. *Shale oils* are apparently the most carcinogenic of all mineral oils, and in the carrying out of an ordinary experiment with this category of agent one usually observes a considerable amount of sebaceous cell atrophy.

To a less degree atrophy is also observed when utilising potent mineral oils obtained from petroleum oil wells, but with weakly potent mineral oils the sebaceous cells may be little affected.

4. When we come to the almost completely *saturated mineral oils*, sebaceous cell hyperplasia begins to be observed, and eventually with certain specimens of oil we may come across sebaceous adenomas.

Thus the mineral oils which are most likely to induce sebaceous adenomas are those which are highly purified with sulphuric acid, &c., such as are met with commercially, as medicinal liquid paraffins, hair brilliantines, and transformer oils. As might be expected, of two samples of mineral oil of an approximately equal degree of saturation the heavier the grade the more likely are sebaceous tumours to be induced. engine and cylinder grades being as a rule less active carcinogenically than their spindle grade counterpart.

5. The most effective sebaceous cell stimulant we have met with is *oleic acid*.

This acid causes simultaneously a sebaceous cell hyperplasia and a hyperplasia of the surface and follicular epithelium. Long-continued application may eventually lead to sebaceous adenomas and benign papillomas of the epidermis, the latter being by far the commoner. We have not meanwhile succeeded in inducing any malignant tumours with the acid used alone, presumably owing to our animals not having been subjected to applications of the agent for long enough time. We were naturally not slow to appreciate the importance of these observations with oleic acid, and their possible significance in relation to breast and other forms of cancer.

COMBINATION OF AGENTS

In several of our previous publications we have discussed the carcinogenicity of chrysene, an unsaturated aromatic hydrocarbon isolated from our synthetic tars. This substance has a relatively low degree of carcinogenicity compared with dibenzanthracene, a related hydrocarbon recently synthetically prepared by E. L. Kennaway and J. W. Cook. Chrysene is an extremely insoluble substance. Applied as a paste in medicinal liquid paraffin it may induce a few benign tumours of the surface epithelium, and occasionally one of them may become malignant, and it is noticeable that such a paste tends to have a greater stimulating effect on the sebaceous cells than has liquid paraffin when used alone. On the other hand, a paste of chrysene and oleic acid may induce many benign tumours of the surface epithelium, and it is usual for more than half of these to become malignant, provided the animal survive for a reasonable period of time. The benign tumours are somewhat late in arriving, but the malignant lag is on the whole unusually short. The effect of such a paste on the sebaceous cells is irregular, but, broadly speaking, it may be expected that in the region of the skin of animals bearing tumours of the surface epithelium there will not be much evidence of sebaceous cell hyperplasia, or there may even be some atrophy, while in the remaining animals sebaceous cell hyperplasia is the rule, and sebaceous adenomas are not exceptional. While oleic acid seems materially to increase the carcinogenic potency of chrysene and other weak agents it does not act in the same direction when mixed with strong agents such as a synthetic tar, our findings in some of our experiments being shown below. (P.=carcinogenic potency and R.P.= relative carcinogenic potency.*)

Agent.	P.	R.P.
Chrysene 7·5 % in liquid paraffin	4	100
„ 7·5 % „ oleic acid	23	575
Gas tar	133	100
„ „ and 10 % oleic acid	96	72
Synthetic tar B/3 10 % in oleic acid ..	206	122
„ „ „ 10 % „ liquid P. ..	169	100
„ „ B/10 10 % „ „ „ ..	721	100
„ „ „ 10 % „ oleic acid ..	580	80
Shale oil S, 10 % in liquid paraffin	0	—
„ „ 10 % „ oleic acid	0·4	Inf.
„ „ 20 % „ liquid paraffin	0	—
„ „ 80 % „ oleic acid	16	19
„ „ pure..	85	100
Californian oil 9, pure	2	100
„ „ 80 % in oleic acid ..	5	250

Inf.= infinite.

There may, however, be a vast difference in the action of a second substance when it is mixed with the first agent before applying and when it is applied separately. This is illustrated in the following experimental results.

Experimental conditions.	P.	R.P.
Tar B/1 on skin previously sensitised with { oleic acid ..	1105	118
Tar B/1 on skin previously sensitised with { lactic „ ..	650	69
Tar B/1 control	940	100
Tar B/19 on skin previously sensitised with oleic acid	1619	121
Tar B/19 control	1339	100
Shale oil, skin treated at intervals with lanolin	0	0
Shale oil control..	85	100
„ „ treated in afternoon with lanolin	19	7
„ „ mixed with 10 % lanolin	21	7
„ „ control..	293	100
Gas tar 1 % mixed with 0·1 % lanolin (9 to 1)	143	128
Gas tar 1 % treated with lanolin in afternoon.. .. .. Below	10	9
Gas tar 1 % control	112	100

It is to be noted that previous applications of oleic acid sensitise, while previous applications of lactic acid desensitise. The carcinogenic activity of shale oil is lessened by the admixture of or separate application of lanolin. In the case of gas tar, admixture of the lanolin sometimes increases its activity while separate application lessens it. Also, if oleic acid is applied to one area of skin and tar subsequently applied to another, the activity of the tar is decreased. The reasons for these differences are quite explicable but they cannot be entered into here.

THE TUMOURS AND THEIR BIOLOGICAL SIGNIFICANCE

The accompanying microphotographs will serve to illustrate the type of tumours we have encountered.

Figs. 1 and 2 show a typical malignant sebaceous-celled tumour induced by the application of shale oil treated with an equal volume of pure sulphuric acid. The oil was registered as non-carcinogenic, and the particular tumour under discussion was the sole representative among the 100 animals utilised. The tumour formed a huge mass in the neighbourhood of the left shoulder and axilla, with an absence of obvious metastases.

Figs. 3 and 4 illustrate a massive malignant tumour situated beneath a squamous-celled epithelioma in an animal painted with a chrysene-oleic acid paste. The tumour is essentially basal-celled in nature with what we call *sebaceous cell inclusions*; an intermixed intermediate type of tumour occasionally met with when utilising certain agents. Such agents will in some animals induce ordinary squamous epitheliomas, often with a basal-celled tendency, or benign sebaceous-celled tumours, and sometimes the intermixed type of tumour referred *to*.

Fig. 5 shows a pure basal-celled growth from the same group of animals.

Figs. 6 and 7 show another of these intermixed tumours in the early stage before the sebaceous cells have disintegrated to form the cyst-like spaces seen in Fig. 3.

Photomicrographs of other varieties of experimental tumours, including benign sebaceous adenomas induced by our agents, have been previously published.[1]

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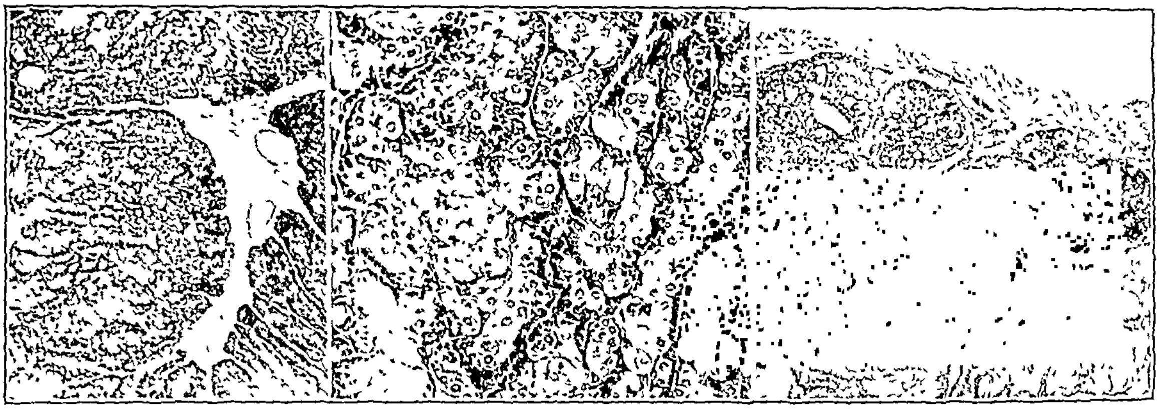
* See Twort, C. C., and Twort, J. M.: Relative Potency of Carcinogenic Tars and Oils, Jour. of Hyg., 1930, xx., 373; and Carcinogenic Potency of Mineral Oils, Jour. Indust. Hyg., 1931, xiii., 204.

FIGS. 1 2 3



Malignant sebaceous tumour. (× 82.) Malignant sebaceous tumour. (×165.) Cystic basal epithelioma. (× 19.)

In order to evaluate these observations we must consider for a moment the biological significance of the particular agents we have been utilising. Oleic acid is of course a constituent of practically all fats originating from animals and plants, and it is important to bear in mind that it is an unsaturated fatty acid *not very distantly related chemically to the olefins.* Consequently we shall expect this acid to be present at some time or other during the decomposition of fatty organic tissues, and it requires no elasticity of the imagination to visualise its possible importance as regards the genesis of many cancers. If oleic acid is capable of inducing tumour-formation of the sebaceous cells and of the surface epithelial cells of the skin, we see no logical reason why it should not act similarly on other epithelial tissues. We cannot however, in our opinion, argue along the same lines as regards our mineral oils and tars. In so far as we are here dealing with agents which are soluble in fats and most ordinary organic solvents, it is not surprising that they are able to penetrate the skin and thereby influence the basal cells, &c. On the contrary, because they are insoluble in water we should not expect them to influence mucous membranes which are mostly bathed in mucus, for we expect the mucus effectively to prevent even surface contact of a mineral oil with the living cells. Although we have examined many thousands of animals, among which some 12,000 have been bearing skin tumours, we have in no single instance met with a tumour of the *mucous membranes.* It is of some significance that we have no record of tumours of tongue or palate when one remembers that it is the habit of mice to clean the back with the paw and to remove the agent from the latter with the tongue. On the other hand, it must also be remembered that we have no record of an internal tumour following treatment with oleic acid, but of course when the animals ingest the acid we are in the presence of a natural substance in a natural situation (in food), and it is presumably dealt with by the digestive juices of the alimentary tract in the ordinary way. We must mention a tumour of the stomach which has recently come to hand, although we have little doubt that it is a rare form of spontaneous tumour.

The tumour was a large squamous-celled epithelioma of the forestomach of a mouse which had been painted for 20 weeks with a watery solution of a mixture of chrysene ammonium and sodium sulphonate, and subsequently injected subcutaneously four months previous to death with a synthetic tar sodium and ammonium sulphonate. The tumour appeared to have its origin at the junction of the fore and glandular part of the stomach, and was invading the liver and adjacent organs.

CANCER OF THE BREAST

The possible part which may be played by oleic acid in the genesis of cancer of the breast has been the main reason why we have studied closely the action of the acid on the skin, and especially on the sebaceous cells. Sebaceous *cells* and *breast cells* are modified epidermal cells, and from the biological point of view the secreting cells of the breast are nothing more than sebaceous cells which have differentiated along another line in order to perform a special function. We have not meanwhile attempted to induce cancer of the breast by the application of oleic acid, for although successful tumour induction would be of interest we feel that negative results would be of little value, because we could not perform an experiment under the conditions occurring naturally. It is not easy to surmise the actual *quantity of acid which would be necessary for the* induction of a breast carcinoma; it would probably be smaller than that required to induce sebaceous tumours, and very much smaller than the quantity necessary to induce malignant tumours of the surface epithelium.

It has been conclusively shown statistically that the female breast which is not allowed to function normally is more liable to develop cancer than one to which a child has suckled over a definite period of time, and then allowed a lengthy period of rest until a subsequent child is born. Anything contrary to nature such as no lactation, under-lactation, and over-lactation, or some other extraneous factor interfering with the natural course of events may predispose to cancer, and in view of our present knowledge it is not difficult to understand why. We can only discuss under-lactation here.

In the event of no lactation or under-lactation we shall have decomposition of the excretory products and consequent liberation of free oleic and other fatty acids. The products of decomposition will be unable to find their way to the surface and will lie in situ in the gland acini and ducts until removed by the body fluids and wandering cells of the host. If, as we surmise, the oleic acid and probably also related fatty acids act carcinogenically on the secreting cells of the breast we must not lose sight of the fact that they may be operating in particularly favourable surroundings. Milk is necessarily a carrier of abundant growth stimulins and it is certainly not deficient in vitamins, so that we are bound to assume an extremely favourable environment for the acid to exert its malignant influence. Applications of lactic and butyric acid to the skin have resulted in no obvious hyperplasia of the surface epithelium, in fact we have found it somewhat atrophied in many animals treated with these acids. In our experiments there was also no apparent effect on the sebaceous cells.

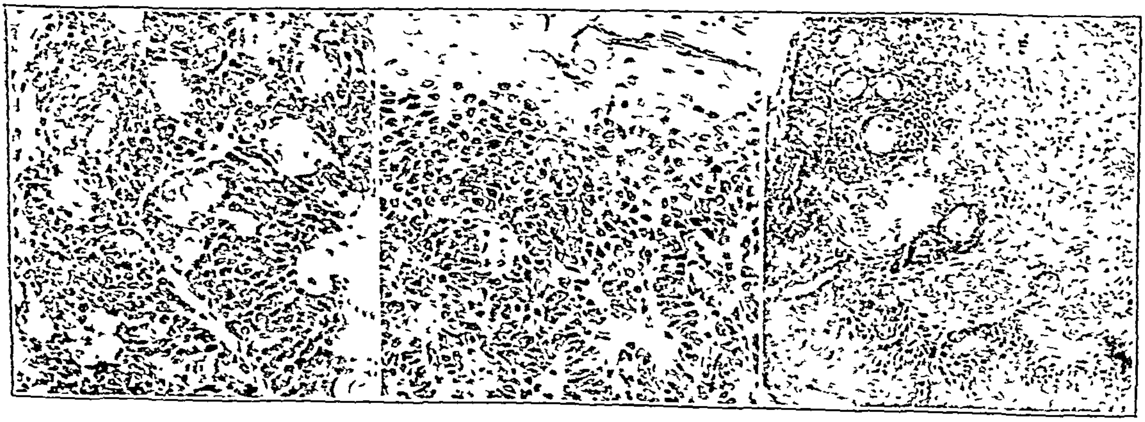
CHEMICAL ASPECTS

On attempting to correlate carcinogenicity with chemical constitution one soon has to admit that some of the carcinogenic agents have very little in common.

In the case of mineral oils we find that potency runs roughly parallel with unsaturation, but the nature of the unsaturated constituents is unknown. Chrysene and 1·2 : 5 6 dibenzanthracene are aromatic hydrocarbons consisting of conjugated benzene rings, and give direct evidence of their unsaturated character only in a few reactions. Oleic acid is unsaturated in the strict sense of the word, having a true double bond in the middle of a straight carbon chain, which also carries a terminal carboxyl group.

So far the only common factors appear to be a fairly large number of carbon atoms directly united to one another, and a certain degree of unsaturation, ethylenic or aromatic. Such a description includes too great a variety of compounds to be of much value, and any attempt to narrow it down appears to exclude substances which have a definite, if slight, carcinogenic action. This variety is rather bewildering in view of the specificity of so many biological reactions —e.g., the different physiological effects of *d* and *l* forms of so many substances, the activity of vitamin D compared with ergosterol, or the importance of the length of chain in determining the effectiveness of chaulmoogric acid and its homologues against *B. lepræ*. On the other hand there are many different types of hypnotics and local anæsthetics.

FIGS. 4 5 6



Cystic basal epithelioma. Sebaceous cell inclusions. (×165.)

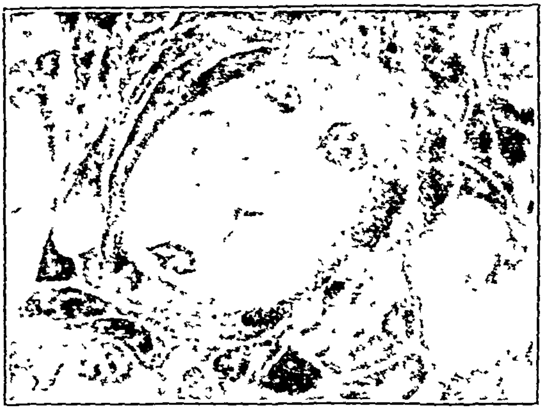
Early basal malignancy. (×165.)

Small basal cell tumours. Sebaceous cell inclusions. (× 82.)

Further difficulties arise in connexion with the combination of agents. Thus we have the following results :—

1. Oleic acid alone gives rise to a few benign tumours.
2. Chrysene in oleic acid, after long application, produces tumours of the surface epithelium which become malignant in a relatively short time.
3. Chrysene in liquid paraffin is much less potent than in oleic acid.
4. The synthetic tars B/10 and B/19, applied in liquid paraffin or chloroform, are very potent.
5. Addition of oleic acid to these tars reduces or at any rate does not increase their potency.

FIG. 7



Sebaceous cell inclusions. (× 1000.)

6. A 0 15 per cent. solution of tar B/19 in oleic acid has a potency not far removed from a similar solution of chrysene.

Perhaps the simplest hypothesis is that two factors (or two types of factors) are involved. These may be tentatively described as (*a*) a sensitising factor and (*b*) a stimulating factor which promotes cancerous development of the sensitised cells. One or both of these factors may be present within the organism as a result of pathological conditions, or perhaps normally to a slight extent. On this view the above results can be interpreted as follows :—

1. Oleic acid is a rather weak "sensitiser."

2 and 3. Chrysene is a fairly powerful stimulant.

4. The synthetic tars, which are complex mixtures, contain both factors.

5 and 6. Oleic acid is a weaker "stimulant" than those present in the tar and acts as a diluent for them.

To obtain direct evidence for the assumption made in Case 4 it would be necessary to resolve a tar into two fractions whose relation to one another would be analogous to that of chrysene and oleic acid. This has not been satisfactorily achieved, but one experiment gave a hint of the possibility.

A fraction was separated from tar B/19 by condensation with ethyl oxalate and subsequent regeneration of the hydrocarbons. This fraction was only slightly toxic. The residue was nearly as potent as the original, but there was a curious lag before any tumours appeared, compared with the re-mixed extract and residue.

In the case of the mineral oils it has sometimes been found that the residues after extraction with methyl sulphite or alcohol produce fewer tumours than the original, but about the same number become malignant. This suggests the preferential removal of a sensitising factor, since only the initial processes are impeded.

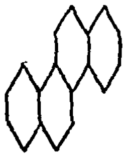
The available data do not permit of any useful attempt to correlate sensitising action with chemical constitution. We may hazard a guess that unsaturation is an important factor, but it is impossible at present to say whether the action is chemical or physical. In the case of the "stimulating" factor, however, recent developments in other fields have opened up interesting possibilities.

GROWTH-STIMULANTS

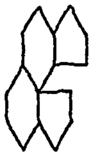
Since active proliferation is a characteristic of cancer cells we have long suspected some relationship between carcinogenic agents and normal growth-stimulants. We therefore regard the chemistry of vitamins and the hormones of pregnancy, &c., as being relevant to our problem.

From a chemical standpoint the best known vitamins are the fat-soluble A and D. Of these, vitamin A appears to be closely related to the terpenes, and probably consists largely of a long, branched carbon chain. We know no carcinogenic substance of this type though analogous substances may be present in the oils. Vitamin D is a member of the sterol group being formed by the isomerisation of ergosterol under the influence of suitable irradiation.

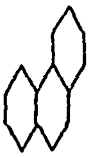
The fact that dehydrogenation of sterols under vigorous conditions produces chrysene I.[2] was suggestive, but it was generally believed that the sterol nucleus was represented by II. and that the formation of chrysene involved a profound rearrangement.



I



II



III

Diels obtained other products under milder conditions and attributed to these formulæ of the fluorene and indene types. In view of this, coupled with Kennaway's observation that cholesterol gives a carcinogenic tar on heating, admittedly to a high temperature, we suspected that hydrocarbons of these types might be the active agents in our tars. The condensation with ethyl oxalate, referred to above, was designed to test this hypothesis, but the extract was relatively inactive.

Recently however, the older view of the structure of sterols has met with much criticism, and the most recent suggestion is that the carbon skeleton of chrysene is present in the original sterol. Bernal[3] has produced evidence for this from X ray and optical measurements, while Rosenheim and King[4] have advocated it on chemical grounds.

From the urine of pregnancy three characteristic substances have been isolated by various workers—viz., pregnandiol, ketohydroxyœstrin, and trihydroxyœstrin. Of these, pregnandiol has no marked physiological action, but ketohydroxyœstrin produces œstrus in immature or ovariectomised animals and the same result is obtained to a smaller degree with trihydroxyœstrin. The œstrin derivatives are formed in the ovary in response to stimulation by the anterior pituitary hormones, and it is believed that they control the earlier stages of the œstrous cycle, inducing the pro-œstrus growth of the uterine tissues and, in some species, a characteristic modification of the epithelial cells of the vagina. These substances are found at all times in normal female blood, but the amount varies during the œstrous or menstrual cycle and increases greatly during pregnancy.

The structure of the œstrin derivatives has been studied by several workers, employing chemical methods, X ray and optical measurements,[5] and the properties of monomolecular films.[6] The results all favour a nucleus of the phenanthrene type III. It will be observed that chrysene contains this nucleus. Pregnandiol is a sterol.[7] It is crystallographically related to ergosterol on the one hand and to the œstrin derivatives on the other (Bernal). It may prove to be an intermediate stage in the formation of physiologically active substances.

The hypothesis that chrysene is the basis of the sterol nucleus has not been generally adopted, so it would be unwise to base too many speculations on it, but from our point of view it is very attractive and we await further developments with great interest. Kennaway and Cook[8] have recently suggested that cancer-producing substances may arise in the body by abnormal sterol metabolism. We have been led into similar speculations from a rather different viewpoint. If the latest formulæ prove to be correct it will mean that vitamin D, œstrin and the carcinogenic substances chrysene, and the 1·2 benzanthracene derivatives all contain the carbon skeleton of phenanthrene. To what extent this may determine their growth-promoting properties remains an open question.

The point we wish to emphasise is the possible significance of the association of growth-stimulins, or substances capable of transformation into growth-stimulins, with oleic acid, with special reference to breast cancer. It is perhaps significant that the cholesterol content of the blood increases greatly during pregnancy, diminishing towards the end and during lactation. This hypercholesterinæmia passes off more quickly in mothers who suckle their children than in those who do not, owing to the secretion of cholesterol in the milk. It is also of interest to note that there are disturbances of the fat metabolism during pregnancy, and that the fœtal liver stores up fat which is less saturated than connective tissue fat. We are not prepared to be dogmatic about the relevance of these observations. We do feel, however, that facts of this nature should be taken into account, and that only by combining observations taken from a number of different fields, along some such lines as we have suggested in this paper, shall we reach a solution to problems connected with our own researches.

Our interest was recently aroused by seeing a report of a paper by Taylor[9] in which it was stated that petroleum oil or mineral oil prevented the reproduction of animals even when wheat-germ oil was included in the diet. Unfortunately we have only been able to obtain abstracts of this paper, but so far as we can judge from these, the author's results are somewhat contrary to our own observations.

SUMMARY

It is suggested that the chief ætiological factor concerned in carcinoma of the breast is a group of compounds containing the carbon skeleton of phenanthrene acting in conjunction with oleic or other unsaturated fatty acids.

The photographs are by R. Combes.

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THE TREATMENT OF PERNICIOUS ANÆMIA BY MARMITE

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THE publication by Lucy Wills[1] of a series of cases of "pernicious anæmia" of pregnancy and "tropical anæmia" successfully treated by marmite raises many questions of importance. It is unnecessary for our present purpose to discuss the identity of her cases with ordinary pernicious anæmia. There is no question about their close similarity, and her results suggested the possibility of using marmite as an alternative or supplement to liver or liver extracts in ordinary pernicious anæmia. Stanley Davidson[2] has already published the results in three cases. One case did well and two did not. Davidson suggests that tropical and non-tropical macrocytic anæmia are different conditions, that the anti-anæmic factor in liver and vitamin B are not related, and that any benefit following the use of vitamin B is due merely to improving the efficiency of the gastro-intestinal tract.

MAINTENANCE CASES

Since the publication of Wills's paper I have treated all my "maintenance" cases with marmite. Without exception these have done well. I show the results of eight such cases, treated by marmite only, for periods of from seven to twelve months. I have equally satisfactory results in a further series of six cases treated by marmite for periods under six months. Other cases are referred to which bring the total up to 19.

Table of Cases of Old-standing Pernicious Anæmia treated (after recovery) with Marmite only for not less than seven months.

Case.	Sex.	Age.	Date of admission.	R.B.C.	Hb.	Date marmite started.	R.B.C.	Hb.	Date last observed.	R.B.C.	Hb.
A	F	34	4/10/30	1·5	32	24/6/31	4·5	82	29/6/32	4·1	80
B	M	43	6/1/30	1·5	38	1/7/31	4·2	76	2/8/32	4·2	90
C	M	60	4/12/29	2·1	56	29/7/31	4·6	96	20/7/32	5·3	102
D	M	55	22/3/29	0·7	17	11/10/31	6·3	100	16/3/32	6·2	102
E	M	52	20/2/28	1·5	38	15/10/31	5·1	92	15/7/32	5·2	100
F	M	56	18/3/31	2·0	50	21/10/31	5·0	92	13/8/32	5·7	100
G	F	59	25/6/30	1·1	28	9/12/31	4·9	90	6/7/32	4·9	92
H	F	58	18/8/31	1·6	34	20/1/32	4·5	80	15/8/32	4·8	88

R.B.C.—Red cells in millions per c.mm.
Hb.—Hæmoglobin as percentage of normal.

The Table summarises the eight maintenance cases treated with marmite. Several were originally cases of great severity, and most of them have already been published[3] in greater detail. The date of admission to my ward is not to be taken as any guide to the previous duration of illness. Case D had been transfused on two occasions. The maintenance dose of marmite has never exceeded ʒi thrice daily. In a few cases it is only ʒi twice a day.

PRIMARY CASES

The following are notes of primary cases treated with marmite only.

CASE 1.—Female, married, aged 37, admitted Nov. 18th, 1931; stated she had not felt fit since a puerperal hæmorrhage ten years before. Lately had severe breathlessness, palpitation, and weakness. Blood showed 1·7 million corpuscles per c.mm.; average size increased; Hb., 40 per cent.; leucocytes, 5000. Van den Bergh direct positive (weak, delayed). Icteric index, 9. Wassermann negative. Achlorhydria. Some tingling of feet and impairment of cutaneous sensibility. Marmite was administered in half-ounce doses thrice daily. A reticulocyte response of 20 per cent. occurred on the eighth day, and increased to 25 per cent. on the tenth day, and remained above 10 per cent. for eight days. On Dec. 15th she had 50 per cent. of hæmoglobin, and owing to domestic trouble went home. On April 26th, 1932, she had 2·5 million corpuscles, with 60 per cent. of hæmoglobin. Her doctor states she is now in good health.

CASE 2.—Male, aged 53, admitted June 6th, 1932. Suffered from weakness and dyspepsia for a year, increased weakness and giddiness for three weeks. Red corpuscles, 2·1; Hb., 52; leucocytes, 6000; films typical. Van den Bergh positive delayed direct. Icteric index, 12. Wassermann negative. Achlorhydria. No nerve symptoms. Marmite, a tablespoonful thrice daily, was started next day. Reticulocytes were 6·5 per cent. two days later, and 9 per cent. on the fourth day. Progress was uneventful but the blood progress showed the very unusual feature of an increase of hæmoglobin more rapid than the increase of corpuscles. Patient was discharged on July 19th with 3·5 million red corpuscles and 95 Hb. The marmite dosage was reduced to ʒi t.i.d. On August 3rd he reported, feeling fit, with 4·5 red cells and 98 Hb.

CASE OF RELAPSE

The following was a relapse case treated with marmite only.

CASE 3.—Male, aged 59, admitted March 17th, 1932. Two years previously became easily tired, suffered from giddiness, tinnitus, tingling in the limbs, and assumed a yellow colour. In December, 1930, he collapsed in an Aberdeen post office, and was conveyed to the Royal Infirmary, where he was under the charge of Prof. Stanley Davidson. He was treated with Ventriculin and, later, with liver extract. About five months ago he became careless about taking liver, and symptoms returned.

On admission he showed a yellowish pallor; red corpuscles numbered 1·3; Hb., 31 per cent.; leucocytes, 4600; reticulocytes, 1 per cent. Spleen was slightly enlarged. Pyorrhœa. Achlorhydria. Positive van den Bergh. Icteric index, 20. Tingling of legs. Sluggish knee-jerks. Some impaired sensibility. On March 19th, 1932, the teeth were extracted and a sharp hæmorrhage followed. Red cells fell to 1·05 and Hb. to 25. Marmite ℥ss t.i.d. was begun on the 21st. By the 28th reticulocytes had reached 11 per cent.; red corpuscles were 1·3 and Hb. 27. A month later red cells were 3·2 and Hb. 67. Two months later red cells were 3·9; Hb. 81. The marmite dose was reduced to a teaspoonful thrice daily. On July 20th the red cells were 3·7, and Hb. 80. On August 17th the red cells were 4·0, and Hb. 80.

LIVER EXTRACT FOLLOWED BY MARMITE

The following cases were treated with marmite after a preliminary course of intravenous liver extract.

CASE 4

Date in 1932.		Blood examination.			Treatment.
		R.B.C.	Hb.	Reticulocytes per cent.	
April	22nd	1·6	34	0·6	Pernæmon* 5 c.cm. daily.
"	27th	1·5	36	8·0	Marmite ℥ ss t.i.d.
"	28th	—	—	33·0	—
May	9th	3·0	66	—	—
"	21st	4·1	70	—	—
"	31st	5·0	98	—	Marmite ℥ i t.i.d.
July	29th	5·3	98	—	" ℥ i bis in die.

*Liver extract (Crookes) for intravenous use.

CASE 4.—Male aged 50. Complained of weakness and breathlessness for four years. Sore tongue. Prickling sensation in limbs. Patient had a yellowish colour. Spleen was just palpable. Achlorhydria. Reflexes normal. Wassermann negative.

CASE 5.—Male aged 61. Complained of breathlessness and dyspepsia. Showed a pale yellow colour. Spleen not enlarged. Achlorhydria. No nerve symptoms. Wassermann negative.

CASE 5

Date in 1932.	Blood examination.			Treatment.
	R.B.C.	Hb.	Reticulocytes per cent.	
May 7th	2·3	42	0·5	Pernæmon 5 c.cm. intravenously daily.
" 16th	2·8	62	3·3	Marmite ℥ ss t.i.d.
June 3rd	4·8	95	—	" ʒ 1 "

These cases seem to prove that marmite is efficacious in the treatment of the average case of pernicious anæmia. The dosage employed has been a tablespoonful thrice daily while the patient is ill, and a teaspoonful twice or thrice daily to maintain health. Although marmite has been found to cause nausea and vomiting, we have only once encountered difficulty in getting a patient to take it, and it was as difficult to get her to take liver or liver extract. The marmite may be dissolved in warm water like a meat extract, may be spread on bread and butter, or may be stirred into milk. Most patients find it palatable and welcome it as a change from liver. It is a pleasant solution to the difficulty that patients in remote districts often find in obtaining liver, and in getting liver in good condition in warm weather. Moreover, marmite would appear to be a useful alternative to liver in gouty, rheumatic, and high pressure subjects.

EFFICACY OF MARMITE AS COMPARED WITH OTHER SUBSTANCES

In this connexion all that can be discussed is the efficacy of different remedies in the dosage usually employed.

I maintain[3] that transfusion of a pint or thereby of compatible human blood is the most powerful stimulus to hæmatogenesis that can be employed, and the transfused corpuscles may save life in emergency. Nearly as efficacious as transfusion (save for the supply of hæmoglobin) is intravenous injection of an active preparation of liver in the recommended dosage. It is an advantage to start off acute cases with intravenous injection because of the great rapidity of action and the consequent saving in hospital beds.

There is, I think, little to choose between the effects of whole liver, liver extract, stomach, stomach extracts, and marmite given by the mouth. One point of difference in the case of marmite emerges in the primary and relapse cases, and that is the persistence of a high colour-index. On liver treatment corpuscles are regenerated more quickly than hæmoglobin, so that the colour-index falls. On marmite the hæmoglobin content outstrips the increase of corpuscles, and the blood picture tends to remain macrocytic even when the hæmoglobin may be so high as 60 per cent. This feature may be regarded as unfavourable to marmite, but the end-result is just as good as that effected by liver.

A point of practical importance is that no extract seems to be so efficacious in the cord degeneration of pernicious anæmia as whole liver.

The question of the vitamin content of commercial liver and stomach preparations, and the rôle of these vitamins in hæmatogenesis has been much discussed (Gilroy[4] and others). It is of interest that an anti-anæmic factor of purely vegetable origin now falls to be investigated.

SUMMARY

Observations on 19 cases of pernicious anæmia indicate: (1) That the administration of marmite in small doses is an adequate means of maintaining cases of recovered pernicious anæmia in good health. (2) Marmite in large doses is a satisfactory remedy for primary and relapse cases of pernicious anæmia of moderate severity. (3) Time may be saved in moderately severe cases by a preliminary course of intravenous injections of liver extract given daily for five or seven days. (4) In very severe cases intravenous injection of liver extract is necessary, and in the most severe cases transfusion of blood is imperative.

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A CONSERVATIVE TREATMENT OF ECLAMPSIA

REPORT OF ONE HUNDRED CASES *

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THE cases on which this paper is based comprise the patients suffering from eclampsia who were admitted to St. Mary's Hospital, Whitworth-street, Manchester, during the three and a half years before February, 1932. In this period the post of resident obstetric surgeon was held consecutively by us, and we are indebted to the honorary staff for permission to present this report.

We propose to review briefly the treatment of eclampsia at the hospital during the 20 years previous to the adoption of the present method, to explain the reasons for the change made in 1928, and to compare results; for true comparative data regarding treatment in this disease can be obtained only by studying the results of different methods carried out in one district, preferably in one institution. It is only necessary to compare the types of case described as severe in various different countries, to realise that what may be considered severe in one place is looked upon as mild in another.

The cases admitted during the years 1908 to 1928 fall, as regards treatment, into two very definite groups. No routine method was in vogue before 1920, but the main features were purgation and diaphoresis, with occasional resort to Cæsarean section and accouchement forcée. Early in 1920, however, the Dublin method was adopted at St. Mary's Hospital, and Table I. shows that the maternal mortality fell from 35·6 per cent. to 19·8 per cent.

During the first eight months of 1928, however, 28 cases were treated with 8 deaths, a mortality of 29·6 per cent. It was felt, therefore, that the results of the Dublin method in our hands were not all that could be desired, the chief objection being that the repetition of colon lavages advised in a severe case appeared to produce a considerable degree of shock. The culminating point was reached when in one case one of us was standing during a lavage with a finger on the patient's pulse and found that it suddenly disappeared; although restoratives were immediately applied, the heart could not be made to beat again.

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* Read before the North of England Obstetric and Gynæcological Society.

TABLE I.—*Cases Treated, 1908 to August, 1928.*

Year.	Total.	Deaths.	Per cent.	Year.	Total.	Deaths.	Per cent.
1908 ..	14	5	35·7	1920 .. Apr.–Dec.	47	8	17·0
1909 ..	12	8	66·7				
1910 ..	20	5	25·0				
1911 ..	25	3	12·0	1921 ..	37	11	29·7
1912 ..	38	11	28·9	1922 ..	45	6	13·3
1913 ..	49	21	42·9	1923 ..	37	4	10·8
1914 ..	45	15	33·3	1924 ..	28	6	21·4
1915 ..	39	17	43·6	1925 ..	34	7	20·6
1916 ..	51	15	29·4	1926 ..	34	7	20·6
1917 ..	35	15	42·9	1927 ..	34	9	26·5
1918 ..	39	15	38·5	1928 .. Jan.–Aug.	28	8	28·5
1919 ..	54	18	33·3				
1920 .. Jan.–Mar.	9	5	55·5				
Total ..	430	153	35·6	Total ..	324	64	19·8

Outline of the Treatment

Other methods were considered, and naturally we were much impressed by the results obtained by Stroganoff. On theoretical grounds, however, we were not inclined to follow his technique absolutely. Our criticism was, that as a routine treatment of a pregnancy toxæmia is and always has been by elimination, it seemed irrational to discard eliminative measures entirely on the appearance of a fit, and thereafter to proceed on purely sedative lines. We decided, therefore, to try to combine the two methods, and in view of the fact that heart failure is the cause of death in many cases, a routine four-hourly heart stimulant seemed desirable. The method of procedure was as follows:—

Hours. TREATMENT A

0. Morphine sulph. gr. ¼, coramine 1 c.cm.
½. Gastric lavage, leaving in stomach castor oil 2 oz. and croton oil 2 minims. Colon lavage, leaving in mag. sulph. 2 oz. (anæsthesia if required).
1½. Chloral hydrate grs. 30 per rectum or mouth.
3. Morphine sulph. gr. ¼.
4. Coramine 1 c.cm.
7. Chloral hydrate grs. 30.
8. Coramine 1 c.cm.
12. Coramine 1 c.cm., chloral hydrate grs. 20.
16. Coramine 1 c.cm.
20. Coramine 1 c.cm., chloral hydrate grs. 20, and later chloral hydrate grs. 20, 8-hourly, if required.

Coramine is a Ciba preparation of camphor and has proved quite satisfactory. The patient was treated in a darkened labour ward and precautions taken to ensure absolute quietude. Strict attention was paid to keeping the patient's air passages clear, and oxygen was resorted to in the presence of cyanosis.

The results obtained in the first few cases were distinctly encouraging, and the method was deemed worthy of an extended trial. Late in 1929, however, by which time some 40 cases had been treated, we read a paper by O. H. Schwarz and W. J. Dieckmann,[1] advocating the use of intravenous glucose and intramuscular magnesium sulphate as follows:—

(1) Magnesium sulphate, 10 c.cm. of 25 per cent. solution intramuscularly on admission, and 5 c.cm. after each convulsion.

(2) Colon and gastric lavage leaving 60 c.cm. of saturated solution of magnesium sulphate in stomach.

(3) Glucose 1000 c.cm. of 20 per cent. solution intravenously, two, three, or four times daily, depending on the case.

It was suggested that this might form a useful addition to our routine which now became:

Hours. TREATMENT B

0. Morphine sulph. gr. ¼, coramine 1 c.cm.
   Magnesium sulphate 10 c.cm. of 25 per cent. solution intramuscularly, and 5 c.cm. after each convulsion.
   Dextrose 1000 c.cm. of 20 per cent. solution intravenously repeated if necessary.
½. Gastric lavage, leaving in stomach castor oil 2 oz. and croton oil 2 minims. Colon lavage, leaving in colon mag. sulph. 2 oz. (anæsthesia if required).
1½. Chloral hydrate grs. 30 per rectum or mouth.
3. Morphine sulph. gr. ¼.
4. Coramine 1 c.cm.
7. Chloral hydrate grs. 30.
8. Coramine 1 c.cm.
12. Coramine 1 c.cm., chloral hydrate grs. 20.
16. Coramine 1 c.cm.
20. Coramine 1 c.cm., chloral hydrate grs. 20, and later chloral hydrate grs. 20, 8-hourly, if required.

Apart from this modification the whole series of 100 cases have been treated on identical lines. Our attitude has been entirely conservative, and in cases where the patient was in labour, the eclampsia, of itself, was not considered an indication for operative interference of any kind. When, however, a complication arose it was dealt with on ordinary lines, as in a non-eclamptic case.

No case was discharged from hospital undelivered. In a few cases induction of abortion or labour was carried out on account of persistent albuminuria after recovery from the eclampsia.

The mode of delivery was as follows:—

Natural forces	54	Forceps	17
Induction followed by delivery by natural forces	7	Version and extraction.	1
Abortion	8	Breech extraction ..	1
Induced abortion ..	3	Cæsarean section ..	1
		Craniotomy	1
		Five cases died undelivered	

Comparison of Results

The results of the various methods are set out in Table II.

TABLE II

MATERNAL MORTALITY

	Total.		Deaths and per cent.
1908 to Mar., 1920 ..	430	No routine method	153 (35·6)
Mar., 1920, to Aug., 1928	324	Dublin method ..	64 (19·8)
Sept., 1928, to Feb., 1932	100	Present method..	7 (7·0)
Under treatment A ..	40	.. ..	4 (10·0)
" " B ..	60	.. ..	3 (5·0)

(Brief notes on the fatal cases will be found at the end of this paper.)

FŒTAL MORTALITY

All cases.	Abortion, stillborn, neonatal deaths. (per cent.)	Well on discharge. (per cent.)
1908 to Mar., 1920	64·3	35·7
Mar., 1920, to Sept., 1928 ..	52·1	47·9
Sept., 1928, to Feb., 1932 ..	54·0	46·0
Treatment A	60·0	40·0
" B	50·0	50·0
Excluding Cases of Postpartum Eclampsia		
1908 to Mar., 1920	67·9	32·1
Mar., 1920, to Sept., 1928 ..	69·8	30·2
Sept., 1928, to Feb., 1932 ..	63·3	36·7
Treatment A	67·7	32·3
" B	60·4	39·6

Excluding 11 Abortions and 18 Postpartum Cases in the Series of 100

	Stillborn, neonatal deaths. (per cent.)	Well on discharge. (per cent.)
Treatment A and B— 71 cases	57·7	42·3
Treatment A— 25 cases	56·0	44·0
Treatment B— 46 cases	58·7	41·3

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[1] Amer. Jour. Obst. and Gyn., 1929, xviii., 515.

This Table shows that the maternal mortality has fallen considerably but the fœtal mortality only slightly since adoption of the present routine.

We now propose to review certain aspects of the 100 cases.

Classification of Cases

Clinically, cases of eclampsia are often grouped under three headings: (*a*) those who will recover under any treatment; (*b*) those who will die despite the best treatment; and (*c*) an intermediate group who are amenable to good treatment. A classification of this kind can, however, hardly be considered scientific, and we propose in this paper to group the cases under two headings only—namely, severe and mild.

We have considered as severe any case where: (*a*) coma was present; or (*b*) the number of convulsions exceed six; or (*c*) the temperature rose above 103°. All other cases are grouped as mild. Using this classification we find :—

Mild: 58 cases. Average number of convulsions 2·7 per cent. Mortality nil.

Severe: 42 cases. Average number of convulsions 8·0 per cent. Mortality 7 = 16·6 per cent.

The following is a comparison of results in severe cases by treatment A and treatment B.

Treatment A.—19 cases. Average number of convulsions 8·9. Mortality 4 = 21 per cent.

Treatment B.—23 cases. Average number of convulsions 7·6. Mortality 3 = 13 per cent.

It will be seen that the mortality was definitely lower under treatment B, but that the cases were probably not quite so severe.

CONVULSIONS

The average number of convulsions in all cases was 4·3 per cent. It will be recognised, however, that the total number of fits per case must be to a certain extent influenced by the efficiency or otherwise of treatment. In relation to this, we may state that convulsions are as a rule controlled completely within a few minutes of the intravenous administration of dextrose. The average number of convulsions in fatal cases was 15·5. The highest number followed by recovery was 22. One patient had convulsions continuously for 1½ hours but recovered.

Coma was present in 36 cases, of whom 6 died. Rise of temperature to 103° was recorded in 8 cases, 2 of whom died.

Œdema was present in 79 cases, 6 of whom died. It is interesting to note that the patient who died, having neither œdema nor coma, had a temperature of 105°.

STAGE OF PREGNANCY AND PARITY

No case occurred before the 20th week, the incidence being as follows :—

20–24 weeks	3 cases	1 death
25–28 „	14 „	0 „
29–32 „	12 „	3 deaths
33–36 „	23 „	1 death
37–40 „	48 „	2 deaths

The incidence of eclampsia would seem to increase steadily during the latter months of pregnancy. The relationship to parturition was :—

Antepartum	43 cases.	Mortality 3	(6·9 per cent.)
Intrapartum	29 „	„ 3	(10·3 „ „)
Postpartum	18 „	„ 1	(5·5 „ „)

This corresponds with the usually accepted ideas both as regards frequency and mortality in the three types of case.

Of the 100 patients, 72 cases were primigravidæ, of whom 4 died; 10 cases were secundiparæ, of whom 1 died; and 18 cases were multiparæ, of whom 2 died. This agrees with most published statistics to the effect that the disease is most fatal in multiparæ.

ALBUMINURIA AND BLOOD PRESSURE

The relationship of the eclampsia to albuminuria may be shown as follows :—

On admission.—Grs. 2 or over by albuminometer, 94 cases; trace of albumin, 1 case; no albumin, 5 cases.

On discharge.—Registrable by albuminometer, 3 cases; trace of albumin, 12 cases; urine clear, 78 cases.

None of the cases without albumin died. This is contrary to the general impression that absence of albumin is a very bad sign. We hope to follow up all the cases at some future date.

The *blood pressures* showed considerable variation, the average systolic pressure being 150·5 mm. Hg. The lowest pressure recorded was 93 and the highest 230. The mean figures in severe and mild cases approximated closely, being 150·2 in severe cases and 150·7 in mild. The average pressure in cases who died was 146·6. The average blood pressure on discharge was 128·5. The suggestion offered by these observations is that the blood pressure does not serve as a reliable aid to prognosis.

Antenatal Care

During the period under review 9116 patients attended the St. Mary's Hospital antenatal clinic. Of these, 7 developed eclampsia, but all recovered under treatment. Short notes of these are as follows.

No. 35. Admitted from clinic owing to severe albuminuria, had one fit only, four hours later, following enema. Responded to treatment and did not go into labour. Induction by bougie six days later. Normal delivery. Urine clear on discharge.

No. 44. Admitted from clinic owing to severe albuminuria, went into labour after enema, was delivered, and had two fits, postpartum. Responded to treatment. Urine clear on discharge.

No. 49. Admitted from clinic owing to severe albuminuria, went into labour after an enema, was delivered, and had one fit postpartum. Responded well to treatment. Urine clear on discharge.

No. 65. Had not attended clinic for five weeks, urine clear at last visit. Postpartum eclampsia, seven fits. Good response to treatment. Urine clear on discharge.

No. 84. A "District" case. Had attended the clinic three weeks previously, when the urine was clear. Postpartum eclampsia, eight fits. Responded to treatment. Urine clear on discharge.

No. 89. A "District" case. Last visit to the clinic was eight weeks previously. The urine was then clear. Postpartum eclampsia, six fits. Good response to treatment. Urine clear on discharge.

No. 93. Admitted from clinic owing to severe albuminuria at 34 weeks. Routine treatment was carried out for two weeks without any improvement, so labour was induced. Patient had one fit postpartum, but responded satisfactorily to treatment. Urine clear on discharge.

In three cases, therefore, the patient had not attended the clinic for some time, the urine on her last visit having been clear. All developed severe postpartum eclampsia. In two cases labour followed the institution of eliminative treatment for albuminuria. Both developed mild postpartum eclampsia. In one, antepartum eclampsia resulted within a few hours only of eliminative treatment being commenced. The patient did not go into labour, but was induced later. In the other case, eclampsia followed labour, induced for persistent albuminuria.

Regular antenatal supervision would seem, therefore, to be an excellent prophylactic against eclampsia.

The Fatal Cases

The following are brief notes on the fatal cases :—

CASE 27.—Patient, aged 27, admitted at 4.45 P.M. on June 11th, 1929, seven hours after the forceps delivery of her fourth child, which was stillborn. During pregnancy there had been several attacks of antepartum hæmorrhage.

Five fits after delivery but before admission. Blood and albumin found in the urine, the B.P. was 100/75. In spite of treatment she became rapidly worse, and died 5½ hours later.

Autopsy showed no abnormal features other than definite softening of the brain substance.

CASE 32.—A case of antepartum eclampsia at term in a primigravida aged 23. Patient was admitted at 9 P.M. on Sept. 8th, 1929, in deep coma. There was a history of her having had five fits, beginning five hours before admission. The urine became solid on boiling, œdema was present. The B.P. was 140/110. She improved under treatment, and on the 9th the fits ceased, she having had nine more after admission. She was conscious and commenced in labour that day. She was delivered of a stillborn child on the next day, labour having taken 14 hours. On the 11th complete suppression of urine became evident. The usual medical treatment was given. but the patient died on the 12th. Post-mortem examination was refused by relatives.

CASE 36.—A case of ante- and intrapartum eclampsia at 38 weeks in a primipara. Patient was sent in as a pre-eclamptic on Sept. 26th, 1929. with a history of five weeks' severe albuminuria, and during the pregnancy she had had several attacks of antepartum hæmorrhage. On admission she was vomiting, complaining of dimness of vision, epigastric pain, and blood was found in the urine in addition to albumin. She was given morphia, a purgative, and an enema. and at 8 A.M. on the 27th she had her first fit, and probably began in labour about the same time. Routine treatment was immediately commenced. The fits ceased at 7 P.M., and her condition improved until about 3 A.M. on the 28th, when the heart became irregular. The patient collapsed and died at 4.30 A.M. Post-mortem refused by relatives.

CASE 38.—Antepartum eclampsia at 24 weeks. Patient, a 3-para aged 24. was admitted at 7.30 A.M., Oct. 11th, 1929, in coma. There was a history of eight weeks' severe albuminuria. and fits at short intervals for five hours before admission. On admission the urine became solid on boiling, the temperature 102·4° F. Routine treatment was commenced. She had nine fits between 7.30 A.M. and 8.30 A.M. when the fits ceased. Despite the cessation of the fits, her condition became worse, pulmonary œdema being a prominent feature. Continuous oxygen was administered, but she died at 6.20 P.M. Post mortem refused by relatives.

CASE 43.—Antepartum and intrapartum eclampsia at 30 weeks in primipara aged 36. Patient was admitted at 3.45 A.M., Jan. 20th, 1930, with history of severe albuminuria for 10 days. She had, however. refused hospital treatment. Three fits occurred before admission and coma was present. Routine A treatment was begum on admission. By 11 A.M. she had had 13 more fits. Intravenous glucose was then given, after which she had three fits, the last being at 2.4 A.M. The glucose was repeated at 8.30 P.M. At 9.30 P.M. severe vomiting began. The temperature began to rise and she became collapsed, necessitating stimulants. Pulmonary œdema was present. Uterine contractions became evident about 8.30, and the temperature rose to 107°. The patient died at 2.40 A.M. on Jan. 21st, 1930. Post-mortem refused.

CASE 58.—Antepartum and intrapartum eclampsia at 30 weeks in 2-para aged 27. Patient was admitted unconscious at 10.30 A.M., August 23rd. 1930, with a history of sudden onset of blindness, severe headaches, and convulsions about 10 A.M. She had had three fits before admission. The urine was found to become solid on boiling; the B.P. was 160/120. Patient was conscious. Routine treatment was commenced. but the glucose was not given till later. She had 14 fits after admission to hospital, 7 before and 7 after administration of the glucose. The last fit was at 6.20 P.M. At 7.45 P.M. an extra colon lavage was given. About this time it was found that she had commenced in labour. At 9.15 the temperature rose to 107·4°, and the patient collapsed. Stimulants and oxygen were given, but she died at 8.10 on the next morning.

Post-mortem.—The liver was small and jaundiced in colour. Microscopically the cells showed much fatty degeneration, and there was some pericellular fibrosis. The kidneys were enlarged and deep red in colour. There was much desquamation of cells and loss of nuclei, both in the tubules and glomeruli. There were numerous casts.

CASE 91.—Intrapartum eclampsia at 31 weeks in a primipara aged 31. Patient was admitted on Oct. 8th, 1931, at 2.35 A.M., in a collapsed condition, with a history of five fits occurring in the five hours previous to admission. She had a weak irregular pulse. Temperature 104°. Blood pressure 140/90, the urine being solid on boiling. The routine treatment was commenced. She appeared to improve following the glucose saline at 3.15 A.M., and she had one further fit only, at 3.25 A.M. She collapsed again, however, and died at 3.40 A.M. Post-mortem refused.

Summary

A conservative treatment of eclampsia has produced an improvement in results at St. Mary's Hospitals, Manchester. the maternal mortality having been reduced to 7 per cent. in a series of 100 consecutive cases.

THE PHYSIOLOGY OF PROTEINURIA

AND ITS CLINICAL SIGNIFICANCE

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URINE from a healthy kidney does not normally contain more than a trace of protein, although Maclean [1] and others have found proteinuria in about 5 per cent. of apparently normal men. Proteinuria may be due to purely physiological conditions, especially those leading to renal venous stasis and to stimulation of the sympathetic nervous system. In disease, proteinuria is associated with nephritis, nephrosis, and other diseases of the kidneys, with cardiac disease associated with venous congestion, the "toxæmias" of pregnancy, fevers, &c. In many of these cases it has been demonstrated satisfactorily that the protein in the urine is identical with the albumin and globulin of the plasma, and it has been assumed that the kidneys allowed these to leak through, either because of local damage, or because of the poor conditions under which they were made to function. In recent years it has been several times suggested that it may be in some cases the proteins which are at fault, instead of the kidneys. Thus Epstein [2] has suggested that nephrosis is primarily a metabolic disorder, in which the proteins have become a waste product, and he has introduced the term "diabetes albuminuricus." Munk, Benatt, and Flockenhaus [3] consider that in lipoid nephrosis there is a change in the physico-chemical characters of the body colloids, and that the renal changes are secondary. Thomas, Schlegel, and Andrews [4] have suggested that the proteins excreted in nephritis are primarily derived not from the serum but from the liver, although serum proteins may accompany the others at later stages. Andrews, Thomas, and Welker [5] in a later paper state that "the presence of serum proteins in the urine in nephritis is due to their combination with other nitrogenous fractions of tissue origin, some of which are highly toxic." It is their belief that "this combination acts as a detoxicating mechanism, and that the elimination of this protein by the kidneys is due to alteration of normal serum proteins by their combination with other split products which render them foreign to the circulation."

The present paper is not concerned with the evidence on which these theories are based, but with the underlying idea which is common to all of them

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—namely, that a normal kidney can excrete a protein which is "foreign" or obnoxious to it. This opinion is widely held, in spite of the very great difficulties in explaining such a property according to the present knowledge of renal physiology. It is well expressed in the following translation from Volhard's treatise on nephritis [6]:—

> "It is one of the many mysterious performances of the kidney epithelium that it does not hold back foreign kinds of protein, but excretes them with the urine."

This belief seems to have been based on the fact that an excess of ingested egg albumin may escape digestion and appear in the urine. The original observation is said by Claude Bernard [7] to have been made by Berzelius about 100 years ago. There are several papers in the literature of 50–70 years ago studying the excretion of egg albumin injected intravenously into animals, and discussing whether it escaped through the glomerular membranes or the tubular epithelium. More recently there have been many studies on the excretion of hæmoglobin, and a few showing that Bence-Jones protein was excreted when injected intravenously into dogs.

In spite of the above evidence that foreign proteins are excreted by the kidney, the matter seemed to be so important clinically, and so difficult of physiological explanation, that it was decided to investigate the matter further. Experiments have been performed both on anæsthetised cats and rabbits, and on isolated kidneys of dogs, which were perfused with defibrinated and oxygenated dogs' blood by means of a pump. In this way observations confined to one animal were avoided, and a watch could be kept for effects due to the nervous system or to organs other than the kidneys. The "pump-lung-kidney" preparations were made in duplicate, so that the two kidneys of one dog could be perfused simultaneously and independently, one kidney being used for experimental, the other for control purposes. It may be stated at once that the experiments on the whole animals and on the isolated kidneys gave identical results. Various proteins dissolved in 0·9 per cent. NaCl were added to the circulating blood, through a cannula in the jugular vein in the whole animals, and by simple addition to the blood reservoir in the isolated preparations. Proteins were chosen, the molecular weights of which were fairly certainly known. It was fortunate that Svedberg and his colleagues [8] had determined so many in the last five years, with particular reference to their stability at various hydrogen-ion concentrations and temperatures. His method is based on a study of the sedimentation of the protein when rapidly centrifuged. It also allows him to obtain an approximate figure for the radii of those molecules which are spherical, and a factor of dyssymmetry in other cases.

The results are summarised in the accompanying Table, which also gives Svedberg's figures for the molecular weights and molecular radii.

It will be seen at once that it is only the proteins with the smaller molecular weights and the smaller *molecular radii* which are excreted. Since it happens to have been only the smaller proteins which were studied by previous workers, a misconception has arisen. The barrier seems to correspond to a molecular weight of 68,000, and a molecular size of somewhere about 2·5 μμ. *Hæmoglobin* has been included in both classes, as it is only excreted when present in a concentration above a certain threshold, as has also been shown by previous workers. It is not apparent why hæmoglobin in high plasma concentration should be excreted, while serum albumin in equivalent concentration is not. There are possibly anomalies about the borderline, and as neither of these proteins has a symmetrical molecule it may be due to some difference in molecular shape. The serum proteins used were human, horse, ox, cat, and dog. The proteins were not separated from one another or purified, but the whole "foreign" serum was added. In no case was the "foreign" serum protein excreted.

Summary of Results

Protein.	Molecular weight.	Molecular radius.
Excreted.		
Gelatin	35,000	?
Egg albumin	34,500	2·17 μμ*
Bence-Jones	35,500	2·18 μμ
Hæmoglobin	68,000	(Not spherical).
Not Excreted.		
Hæmoglobin	68,000	(Not spherical).
Serum proteins—		
Albumin	67,500	(" ")
Globulin	103,800	(" ")
Casein	188,000	(" ")
Edestin	208,000	3·94 μμ
Hæmocyanin (Helix)	5,000,000	12·00 μμ

* 1 μμ = 1 millionth of a millimetre.

Such proteins as were excreted were concentrated, the concentration ratio—urine/plasma—being about 5. There was no evidence that the elimination of moderate amounts of protein affected the renal function. Nevertheless, it is possible that very prolonged excretion of large amounts of protein might interfere with normal renal function, which might account for experiments by previous workers who detected serum proteins being excreted at the same time as egg albumin, and would also suggest that the renal insufficiency sometimes, but not always, associated with Bence-Jones proteinuria, may be a secondary effect.

We therefore conclude that proteins are excreted or are not excreted by the normal kidney according to their physical size, and not according to their chemical nature or biological origin. This is a finding which simplifies the approach to the study of the excretion of protein in disease. Svedberg has shown that some of the proteins with large molecular weights can be broken up into units of lower molecular weight, under various conditions of salt concentration and acidity, and he regards a unit of molecular weight of 35,000 as common to proteins. It is therefore not inconceivable that some such change might occur in disease, with subsequent excretion of the smaller molecule. We are proceeding to investigate the question as to whether any of the proteins found in human urine in disease are excreted by a normal kidney. Those purified by dialysis from the urine of patients with cardiac lesions and venous congestion do not pass through a normal kidney. Our observations on nephritic urinary proteins are not yet numerous enough to publish.

A full account of the work referred to in this paper, with experimental details, will be published elsewhere, together with a histological note by Dr. Dorothy S. Russell.

SUMMARY

Several theories of renal disease depend on the assumption that kidneys can excrete "foreign" or obnoxious proteins. Experiments on animals have shown that only proteins with molecular weights less than 68,000 are excreted. Proteins with larger molecular weights, including serum proteins of other species, are not excreted. Hæmoglobin, with a molecular weight of 68,000, is peculiar in that it is excreted when its concentration in the plasma exceeds a certain value. Whether or not a protein

is excreted by the kidney depends on its physical properties, and not on its chemical nature or biological origin.

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Clinical and Laboratory Notes

ARTIFICIAL PNEUMOTHORAX

SOME RESULTS OF OUT-PATIENT TREATMENT

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IN a report published in THE LANCET (1931, i., 1028) we dealt with the results of treatment of 26 cases of pulmonary tuberculosis at an out-patient artificial pneumothorax clinic at Victoria Park Hospital during 1930. These cases have been further observed and, with others, form a group of 55 treated during 1931.

In our previous report we drew special attention to the relatively minor importance of the mechanical aspect of the treatment, and we have again been impressed by the necessity for careful review of the patient as a whole, and consideration of symptoms and physical signs at each visit. Only by such constant supervision can the full benefit of the treatment be obtained.

An analysis of the cases and results of treatment is given below.

Total cases, 55: male, 22; female, 33.
Average age: males, 30·1 years; females, 24·5 years.
Age-groups.—Male: 10–20, 1; 21–30, 11; 31–40, 7; 41–50, 3. Female: 10–20, 8; 21–30, 22; 31–40, 1; 41–50, 2.
Extent of lung disease: unilateral, 41; right, 17; left, 24; bilateral, 14.
Side of pneumothorax: right, 25; left, 28; bilateral, 2.
Prognosis: good, 35; doubtful, 9; poor, 11.
Working or fit to work: 34.
Unfit to work: 21.
Weight: stationary, 35; gain, 10; loss, 10.
Sputum: test for tubercle bacilli positive, 10; sputum absent, or T.B. negative, 45.
Effusion: serous, 18; purulent, 2 ("sterile" T.B. present) (1 spontaneously absorbed).
Adhesions: operated on, 7; not operated on, 31.
Admitted to hospital or sanatorium: 9.
Average duration of pneumothorax to end of 1931: 22 months.
Duration in years: 1 year, 23; 2 years, 18; 3 years, 12; 4 years, 2.
Intervals of refills: 1 week, 2; 2 weeks, 15; 3 weeks, 10; 4 weeks, 10; 5 weeks, 5.

In a disease the course of which is so varied as is that of pulmonary tuberculosis, figures must necessarily be interpreted with caution, the more so if the series of cases is small. Nevertheless, the fact that of the 55 cases 34 remain free from symptoms of illness and are either in actual employment or fit to work appears to us, in the circumstances, a satisfactory result. Routine examination of sputum has given a positive result in ten cases only during the year, and in two of these the test has since become negative. The removal of a large proportion of patients from the positive to the negative group must be regarded as a definite advantage to the community. In 29 of the present series both cough and sputum are absent.

Pleural effusion of some degree was again common, complicating 20 cases, of which 18 were serous and 2 purulent, containing tubercle bacilli, but sterile on culture. Fluid was found to appear more frequently among those patients in whom adhesions prevented a complete collapse of the lung. Thus, of 38 such cases with adhesions, effusion occurred in 17 (45 per cent.), while of 15 cases free throughout from adhesions, in 1 only (6·3 per cent.) was fluid found. In the remaining 2 cases of the series an effusion had followed the division of adhesions previously present. These results lend support to the conclusion of S. R. Gloyne,[1] from experimental studies and post-mortem examinations, that the probable cause of effusion complicating pneumothorax is the stretching and rupture of an adhesion at a point at which tubercle bacilli can be liberated into the pleural cavity.

In the majority of cases the occurrence of effusion caused no serious interference with the treatment; often the degree of collapse was thereby improved, while the intervals between refills could be subsequently lengthened. As regards prognosis, there appeared little to choose between those cases with and those without effusion. Of 18 cases with serous effusion the results were good in 12 and doubtful or poor in 6, while of the 35 cases without effusion 23 did well and 12 had a doubtful or poor prognosis. Five cases at some stage of their course required air-replacement.

In 4 cases effusion was followed by an obliterative pleurisy, creeping slowly upwards from the diaphragm with re-expansion of the lung below a fluid level, the effusion being finally absorbed or reduced to a small encysted or loculated collection, surrounded by densely thickened pleura and fibrotic lung. In each instance, although refills had to be abandoned, the final condition of the patient was good.

Nine patients were admitted to hospital or to sanatoriums during the year; 3 for division of adhesions, 4 to sanatoriums as an accessory to treatment and to help favourable progress, and 2 because the condition was deteriorating.

Pneumothorax was discontinued in 17 cases. In 8 of these it was considered safe to allow re-expansion of the lung, as the disease appeared clinically arrested, the average duration of the collapse being two years ten months. The reason for discontinuing the pneumothorax was fluid in 4 cases; extension of disease to the other lung in 4; and in 1 case interference with the circulation resulting in cardiac distress and dropsy, which were relieved on ceasing the refills.

APPARATUS FOR THE MICRO-ESTIMATION OF BLOOD CHOLESTEROL

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IN view of the importance of following the blood cholesterol in the treatment of diabetes some method of estimating it, using only small quantities of blood, has become desirable.

In 1924 Leiboff[1] described a method demanding the use of only 0·25 c.cm. blood, an amount easily obtainable by finger puncture. In Leiboff's method the blood is taken up into a 0·25 c.cm. pipette and discharged on to a disc of filter paper, which is thereafter extracted with chloroform in a special form of still. The method has the advantages of being simple, quick, and of requiring only a small amount of blood; further, owing to the fact that the extraction and estimation are performed in the same tube, there is no loss of the cholesterol under estimation. It has, however, certain disadvantages dependent upon the fact that the special Leiboff extraction tube is connected to the special still by means of a cork; the distillation is performed over a water bath and in using the apparatus it has proved very difficult to prevent water due to steam condensation soaking through the cork and spoiling the chloroform extract.

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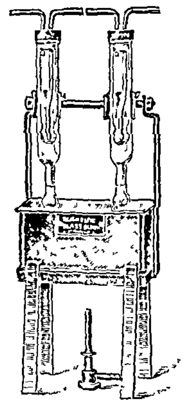
[1] Tubercle, 1926, vii., 424.



The apparatus described below is a modification of the original Leiboff tube designed to eliminate this disadvantage; it has the further advantage of doing away with the necessity for the special still, a fairly expensive piece of apparatus.

The *apparatus* consists of a tube 6 in. long and 1 in. in diameter; it is constricted at the lower end and terminates in a bulb after the manner of the Folin tube. The bulb below the constriction is graduated accurately to a total content of 5 c.cm. The tube may be fitted with a side-tube to allow of the escape of the chloroform vapour, but this is not necessary. Suspended in the upper part of the tube is a simple condenser.

Method.—The blood specimen may be collected from a finger prick straight into the 0·25 c.cm. pipette or alternatively oxalated blood may be used; it is discharged on to a filter-paper disc ¾ in. in diameter cut from Whatman filter paper 1/16 in. thick; the discs should be ether-extracted in bulk before use. If the apparatus has not a side-tube two small crescents may be "nibbled" from the edge of the disc to allow free passage of the chloroform vapour. In order to get rid of water the disc with the absorbed blood is dried by gentle heating for half an hour at between 40° C. and 50° C. A little less than 5 c.cm. pure dry chloroform is poured into the extraction tube and the dried impregnated filter-paper disc is dropped into the tube where it remains supported just above the constriction. The condenser is placed in position and the tube immersed to the level of the chloroform in a bath of boiling water. Extraction has been found to be complete in 20 minutes, but half an hour is usually allowed. The tube is removed from the bath, wiped dry, and the condenser and disc are removed; when the tube has cooled to room temperature chloroform is added exactly to the 5 c.cm. mark. Estimation is performed in the usual way making use of the Liebermann-Burchard reaction; 5 c.cm. of a standard solution of cholesterol containing 0·4 mg. cholesterol per 5 c.cm. is placed in a similar tube; to both standard and test are added 2 c.cm. acetic anhydride and 0·1 c.cm. concentrated sulphuric acid. Cork stoppers are inserted, the tubes are then inverted twice to mix well, cooled for half a minute in cold water, and set aside in the dark for ten minutes for the colour to develop. Comparison is made with the colorimeter, the standard being set at 10 or 15 depending on the intensity of colour of the unknown. Calculation:—

$$\frac{\text{Reading of standard}}{\text{Reading of unknown}} \times 160 = \text{mg. per 100 c.cm. blood.}$$

TABLE I

Experiment No. ..	1	2	3	4
Amount of cholesterol—				
On disc	in mg. 0·1	0·2	0·5	1·0
In control	,, 0·1	0·2	0·5	1·0
Colorimeter reading—				
Of control	in mm. 15·0	15·0	15·0	10·0
Of extract (using Leiboff tube) ..	,, 14·9	14·9	15·1	10·0
Of extract (using modified tube) ..	,, 14·8	15·0	14·9	10·1

The standard solution of cholesterol should be kept in the form of a concentrated 0·08 per cent. solution and diluted 1 in 10 for use.

Table I. indicates the accuracy of the method. Varying amounts of cholesterol were absorbed on to the discs and extracted, and the extracts were compared with controls containing the same amounts. Table II. shows comparative estimations by the methods of Bloor[2] and of Myers and Wardell.[3] It will be noted that the readings obtained by the Leiboff method are higher than those obtained by the method of Myers and Wardell. This fact was noted by Leiboff in his original description of the method and is probably due partly to loss in transferring the plaster-of-Paris from the mortar to the extraction thimble, and partly to unequal percolation of the plaster-of-Paris mass by the chloroform.

TABLE II

Experiment No.	1	2	3
Cholesterol content of blood in mg. per cent. by method of—			
Bloor	168	160	235
Leiboff, using modified tube	164	152	210
Myers and Wardell	132	128	182

I am indebted to Dr. S. C. Dyke, director of the department, for his kind assistance. Further particulars with regard to the apparatus described are obtainable from the makers, the Scientific Glass-blowing Co., 95, Gray's Inn-road, London, W.C.1.

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1. Leiboff, S. L.: Jour. Biol. Chem., 1924, lxi., 1.
2. Bloor, W. R.: Ibid., 1916, xxiv., 227, 447.
3. Myers, V. C., and Wardell, E. L.: Ibid., 1918, xxxvi., 147.

THE URETERIC LAMP AND ITS USES

BY TERENCE MILLIN, M.CH. DUB.,
F.R.C.S. ENG. AND IREL.

HON. ASSISTANT SURGEON, ALL SAINTS' HOSPITAL FOR GENITO-URINARY DISEASES, LONDON

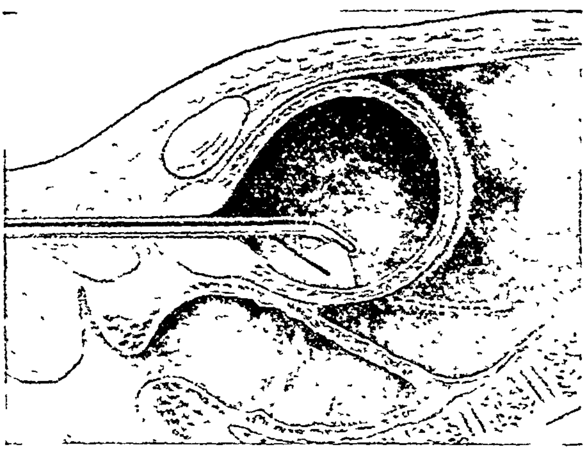
THE great strides made in urological diagnosis in recent years have led to the recognition of many lesions of the ureter or upper urinary tract which call for ureteric surgery. Sometimes the identification of the ureter after abdominal section is by no means easy, especially when one is dealing with the pelvic portion of the tube. Some operators pass a ureteric catheter and rely on palpation, but the illumination of the ureter obtained with an intra-ureteric lamp is a great advantage. Such an instrument is useful, not only where the ureter is the avowed object of the surgical attack, but in many cases where extensive peri-ureteral dissection may be necessary, as in Wertheim's radical hysterectomy or Miles's abdomino-perineal resection of the rectum. The following case illustrates the use of a type of transilluminator whose advantages are not, I think, sufficiently appreciated.

The patient, aged 56, was referred on account of attacks of renal pain recurring every few months during the preceding nine years, associated occasionally with slight hæmaturia. These attacks began with pain in the right loin, which radiated backwards to the renal angle. They were seldom severe, and rest in bed led to their prompt disappearance. There were no other urinary symptoms. Clinical examination was negative. Radiography revealed a small shadow in the right iliac fossa, sufficiently close to the probable line of the ureter to raise the suspicion of urolithiasis, and immediately below the right sacro-iliac synchondrosis the shadow of a small pin was seen. A large opaque ureteric catheter was readily passed to the renal pelvis without obstruction and clear urine. subsequently proved to be sterile, was withdrawn. Radiographically, the shadow in the iliac fossa was seen to be 1 cm. outside the line of the ureter. The pin overlay the catheter directly. Intravenous urography showed kidneys functionally intact, but slight pyelectasis was present on the right side with a prolonged emptying time. In all the films the pin overlay the pelvic ureter and, in all, the right ureter was indistinctly outlined in the iliac fossa, suggesting a spasm in correlation with the other findings.

The patient was sceptical as to the possibility of his having swallowed a pin unwittingly. More questioning revealed the fact that after meals there was usually some discomfort in the right iliac fossa. A provisional diagnosis of peri-ureteritis due to a foreign body in the vermiform appendix was made and laparotomy was advised.

After induction of anæsthesia (gas-oxygen-ether). the ureteric transilluminator (described below) was passed through a Buerger operating cystoscope. The abdomen was opened through a right paramedian incision and a long appendix. hanging quite freely into the pelvis, was exposed. It was removed and proved to contain a small steel pin in the distal extremity, the point of the pin directed against the tip of the viscus. The ureteric lamp was switched on and, with the intestines packed out of the way, the ureter was clearly defined and examined. The two calcified glands seen radiographically were felt lateral to the ureter but, in direct contact with the tube, were seen two or three small discrete glands. As there was no apparent peri-ureteric thickening, dissection was deemed unnecessary and the abdomen was closed. Eight months have elapsed since the operation and there has been no recurrence of the renal pain. All the dyspeptic symptoms have likewise disappeared. It appears probable that the appendicular glands in the ileocæcal angle were causing ureteric spasm with varying degrees of upper urinary tract obstruction.

The ureteric lamp or transilluminator used in this case was introduced more than ten years ago by Mr. Canny Ryall. It consists (see illustration) of a small lamp mounted on a long flexible insulated wire, similar in appearance to the commonly employed ureteric catheter. The lamp itself is covered save for two small windows through which the light is projected. A length of cord connects the lamp with an accumulator. and interposed on the circuit is a switch. The ureteric portion is made in various sizes from 7 F. to 15 F., all readily introduced through an operating cystoscope. The actual passage of the transilluminator takes but two or three minutes and entails no difficulty to those versed in the technique of ureteric catheterisation. The larger sizes are useful for the illumination of vesical diverticula.



One warning is perhaps necessary. It is essential to be sure that the terminal portion containing the lamp is well screwed home, since a loosely fitting junction might well lead to the lamp being left behind on withdrawal of the catheter. I have not heard of such an accident, but it appears to be a possibility. The instrument is withdrawn when the ureter has been identified and, as a routine, the integrity of the equipment should be verified.

I am indebted to Mr. Canny Ryall for permission to reproduce the accompanying illustration, which first appeared in his " Operative Cystoscopy."

REVIEWS AND NOTICES OF BOOKS

Pseudo-Ulcus Ventriculi

By H. HANSEN. Copenhagen: Levin and Munksgaard. 1932. Pp. 430.

Dr. Hansen has written a book of over 400 pages based upon a careful analysis of 85 patients suffering from gastric ulcer or presenting symptoms similar to those of ulcer. At the same time he has reviewed fully the extensive literature upon this subject; the list of references occupies 30 closely printed pages. The clinical picture of gastric ulcer may be so variable that any long-standing indigestion is liable to be suspect; on the other hand many causes may produce similar symptoms. Dr. Hansen has paid particular attention to tuberculosis, and believes that a large proportion of so-called simple dyspepsias have their origin in tuberculosis. All workers will agree that benign tuberculosis of the lungs is able to cause disorders of gastric function and symptoms of gastric pain, but the frequency with which such dyspepsia offers diagnostic difficulties may vary considerably in different countries. In England the differential diagnosis of phthisis from gastric ulcer is not so common a problem as it would appear to be in Denmark.

To those specialising in digestive disorders Dr. Hansen has given useful help. He has collected valuable information from the scattered literature, and has supplied instructive full case-histories, although the numbers he is able to quote are too small to justify general conclusions. The inconstancy of symptoms on which he relies as a point against the probability of gastric ulcer is often found in proved cases of this disease. But his discussion of the symptoms which make unlikely the presence of an ulcer will supply a convenient summary of the knowledge which has been gained by clinicians of wide experience.

Abdominal Cavity and Peritoneum

A Clinical Study. By EDWARD M. LIVINGSTONE, B.Sc., M.D., Associate Visiting Surgeon, Bellevue Hospital. New York: Paul Hoeber. 1932. Pp. 866. $15.

THE phenomena of abdominal disease are the result of the relations of the viscera to the abdominal walls and more distant parts of the body, and are explainable largely on embryological and neurological grounds. The object of the author has been to help the clinician by placing the mechanism of symptoms upon a rational basis, and in pursuit of this aim he has divided his subject up into chapters in which are considered separately the cavity. the wall, the gastro-intestinal tract. visceral neurology, and so on. The book has a refreshing and stimulating quality; nearly every topic is presented from an unfamiliar aspect. The arrangement of matter, however, leads to much overlapping, and yet a sense of incompleteness in individual sections. For example, on page 593 a section is headed, "Reflexes initiated from within the stomach and expressed elsewhere." This is literally true, since a few lines further down we are referred to page 213 for the points of tenderness and hyperalgesia associated with peptic ulcer; we are then asked to turn to page 69 to learn what Sale's reflex is; and on proceeding to page 69 and satisfying ourselves about diaphragmatic spasm, we are told that it can also be detected by Litten's sign, an account of which may, it is said, be found in the "section on eponyms." This may indeed be so; we ourselves did not pursue the investigation further. It is common throughout the book to find a reference to signs or symptoms of which the explanation is given elsewhere. Even this confused arrangement of the material does not detract much from the value of a book which contains such useful information. A particularly good chapter is that entitled The Clinical *Interpretation of Viscerosensory Phenomena or Skin* Signs, to which Dr. Livingstone has given much study. On the physiological side there are important omissions: the phenomena of secretion, the influence of endocrine glands on abdominal phenomena, the physio-pathology of intestinal obstruction. A curious feature is a collection of more than 1000 examination questions which occupy 100 pages. An attractive collection of facsimile reproductions of some of the epoch-making contributions to abdominal diagnosis is included.

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The second part of the book studies the clinical and anatomical findings. In many cases a detailed clinical history is given, illustrated by electrocardiographic tracings, and in some cases X ray photographs or orthodiagrams; the subsequent post-mortem findings are related and illustrated with microphotographs of serial sections of the bundle. These observations appear to cover practically all the known types of disordered rhythm, and many hitherto unpublished observations are included.

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Statistical Methods for Research Workers

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By HELGE LUNDHOLM, Ph.D., Associate Professor of Psychology, Duke University. Durham, N.C.: Duke University Press. 1932. Pp. 117. 5*s.* 6*d.*

THE general method of this work is that which has been until lately characteristic of much American psychiatry. Prof. Lundholm attempts to interpret the morbid development of the schizophrenic patient as being the "life-situations" of a specially responsive personality; he considers it mainly in the light of McDougall's general doctrine of psychology. The virtue of the method lies in its emphasis on the interplay of disposition and environment, its weakness in the superficial broadness of survey and reliance on explanation in terms of comprehensible behaviour. It offers rather facile speculations about accepted data and these speculations do not suggest further lines of inquiry. The discussion of delusions and of "scattered" thinking in this study is surprisingly out of touch with the intricacies of modern psychopathology. The author has clearly spent much time in the observation of patients and has succeeded in fitting most of their behaviour into a complete framework of theory. Such interpretative studies are admittedly more satisfying to many psychiatrists than is a recognition of the great gaps in present knowledge; a patient willingness to collect further observations or to test dubious but stimulating hypotheses is more rare. Dr. Lundholm offers nothing astonishing and nothing profound but much that is interesting. His style is not lucid; such phrases as "the contex of a complex" and "this son of man" irritate and mystify the reader.

Anatomie des lymphatiques de l'homme

By H. ROUVIÈRE, Professor of Anatomy in the Faculty of Medicine of Paris. Paris: Masson et Cie. 1932. Pp. 489. Fr.150.

THIS book represents the information of to-day concerning the lymphatic systems of man, set forth by a well-known authority. Prof. Rouvière has devoted years to this study, and to the collection of results obtained by other workers; the present work, therefore, has value for the clinician as well as for the anatomist. The subject does not lend itself to a description which communicates the author's enthusiasm to the reader, for it would be idle to pretend that continuous accounts of groups and subgroups of nodes with their attendant collector and drainage systems, do not in their repetitions become somewhat wearisome. Here at least one is fortified by the knowledge that one is receiving of the best. The brief descriptions in English text-books are in general agreement with the detailed statements made in this monograph, which also deals with variations not found in text-books. The recent work of Kiss and Botar on the relations between the lymphatic channels and the vegetative nerve-plexuses to much overlapping, and yet a sense of incompleteness in individual sections. For example, on page 593 a section is headed, "Reflexes initiated from within the stomach and expressed elsewhere." This is literally true, since a few lines further down we are referred to page 213 for the points of tenderness and hyperalgesia associated with peptic ulcer; we are then asked to turn to page 69 to learn what Sale's reflex is; and on proceeding to page 69 and satisfying ourselves about diaphragmatic spasm, we are told that it can also be detected by Litten's sign, an account of which may, it is said, be found in the "section on eponyms." This may indeed be so; we ourselves did not pursue the investigation further. It is common throughout the book to find a reference to signs or symptoms of which the explanation is given elsewhere. Even this confused arrangement of the material does not detract much from the value of a book which contains such useful information. A particularly good chapter is that entitled The Clinical Interpretation of Viscerosensory Phenomena or Skin Signs, to which Dr. Livingstone has given much study. On the physiological side there are important omissions: the phenomena of secretion, the influence of endocrine glands on abdominal phenomena, the physio-pathology of intestinal obstruction. A curious feature is a collection of more than 1000 examination questions which occupy 100 pages. An attractive collection of facsimile reproductions of some of the epoch-making contributions to abdominal diagnosis is included.

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Schizophrenia

By HELGE LUNDHOLM, Ph.D., Associate Professor of Psychology, Duke University. Durham, N.C.: Duke University Press. 1932. Pp. 117. 5*s*. 6*d*.

THE general method of this work is that which has been until lately characteristic of much American psychiatry. Prof. Lundholm attempts to interpret the morbid development of the schizophrenic patient as being the "life-situations" of a specially responsive personality; he considers it mainly in the light of McDougall's general doctrine of psychology. The virtue of the method lies in its emphasis on the interplay of disposition and environment, its weakness in the superficial broadness of survey and reliance on explanation in terms of comprehensible behaviour. It offers rather facile speculations about accepted data and these speculations do not suggest further lines of inquiry. The discussion of delusions and of "scattered" thinking in this study is surprisingly out of touch with the intricacies of modern psychopathology. The author has clearly spent much time in the observation of patients and has succeeded in fitting most of their behaviour into a complete framework of theory. Such interpretative studies are admittedly more satisfying to many psychiatrists than is a recognition of the great gaps in present knowledge; a patient willingness to collect further observations or to test dubious but stimulating hypotheses is more rare. Dr. Lundholm offers nothing astonishing and nothing profound but much that is interesting. His style is not lucid; such phrases as "the contex of a complex" and "this son of man" irritate and mystify the reader.

Anatomie des lymphatiques de l'homme

By H. ROUVIÈRE, Professor of Anatomy in the Faculty of Medicine of Paris. Paris: Masson et Cie. 1932. Pp. 489. Fr.150.

THIS book represents the information of to-day concerning the lymphatic systems of man, set forth by a well-known authority. Prof. Rouvière has devoted years to this study, and to the collection of results obtained by other workers; the present work, therefore, has value for the clinician as well as for the anatomist. The subject does not lend itself to a description which communicates the author's enthusiasm to the reader, for it would be idle to pretend that continuous accounts of groups and subgroups of nodes with their attendant collector and drainage systems, do not in their repetitions become somewhat wearisome. Here at least one is fortified by the knowledge that one is receiving of the best. The brief descriptions in English text-books are in general agreement with the detailed statements made in this monograph, which also deals with variations not found in text-books. The recent work of Kiss and Botar on the relations between the lymphatic channels and the vegetative nerve-plexuses here noted is not well known in England. Of interest too is the division of the costal pleura *into areas; this division* was proposed some few years ago by Prof. Rouvière himself, and the separate drainage of the upper part was pointed out at that time. This part of the pleural sac is, embryologically, a secondary extension, and we may hope that the lymphatic system will be described some day from the standpoint of developmental morphology, to which it would seem in many ways to be adaptable. Prof. Rouvière's work should remain a standard for years to come, and provides a first-class book of reference with a complete bibliography.

RESEARCH ON MENTAL DISEASE

A SUPPLEMENT[1] to the eighteenth annual report of the Board of Control contains the record of scientific research at 60 different institutions under the auspices of the Board. The financial crisis most unfortunately caused postponement of a scheme of coördinated research which the Board hoped to be able to carry out under the sanction provided by Section 6 of the Mental Treatment Act. There is no branch of medicine, says the report, in which research is more needed, and to advance beyond the stage of early treatment to definite prophylaxis is impossible in the present state of knowledge. Even from the purely economic standpoint, a small reduction in the incidence of mental disorder would soon more than compensate for the cost of extended research. Meanwhile, however, much good scientific work continues to be done in individual hospitals; local successes are won here and there, but the Board sadly regrets the absence of any general advance. Nevertheless, it recognises a real progress in general efficiency; the process of hospitalisation continues steadily, and recent appointments to the post of superintendent have almost without exception gone to men of scientific outlook.

Communications regarding research have been received from 49 of the 98 county and borough mental hospitals, from 4 of the 13 registered hospitals, and from 7 institutions for mental defectives. This is an increase of 18 on the previous year. Summaries of routine laboratory work have been sent from 41 institutions, more than twice as many as last year. The Board looks forward to being able to collate these returns. Several of the mental hospital laboratories are recognised as county laboratories or undertake work for the public health authorities.

LABORATORIES

The modern treatment of mental disease, in particular the use of induced pyrexia, has added considerably to the pathological work which is necessary in an adequately equipped mental hospital. Most mental hospitals now have a laboratory of their own, and either a pathologist or one member of the staff specially interested in pathology. At Coney Hill (Gloucester) a pathological laboratory has been equipped for routine investigations and for some research, and here, as in several mental hospitals, the laboratory is proving useful to the city and county; the pathologist carries out tests for the medical officer of health and the Gloucester Royal Infirmary. Wassermann tests are being done on all the patients in the hospital, and in future the test will be made on admission. This measure, adopted in a number of hospitals, is giving interesting results.

Increasing attention is being given to chronic infective processes as a possible cause of mental disorder.

From Birmingham comes a study of "Nasopharyngeal Sepsis in 1001 cases of Mental Disorder," and several other papers on the same subject. The Board admits, however, that at this stage of the investigations there must almost inevitably be doubt as to the extent and frequency with which these conditions exert their influence, but hopes that every encouragement will be given to this line of study and treatment. There are also a considerable number of biochemical communications, including several studies in blood-sugar. Cardiff is investigating how far patients with a hyperglycæmic index vary in response to the administration of various internal secretions. An inquiry there into nitrogen metabolism suggests a cleavage between depressed patients on the one hand and cases of dementia præcox and stupor on the other. Much painstaking work on dysentery and allied infections has been carried out, and the report from Wakefield is a noteworthy lesson on the value of prophylactic inoculation. Caterham shows how much dislocation of administration and interference with patients' amusement *can be avoided by the employment of prophylactic methods*, such as Dick-testing and inoculation.

The Birmingham Research Board has concerned itself with the new stain for vessels in thick brain sections. A regular examination for localisation and type of vascular abnormality has been commenced, but unfortunately the financial position is causing delay. Among the conditions recognised are: microscopic areas of ischæmia, occlusion of vessels, scars of non-patent vessels, capillary leakages of serum, scars of old meningitis, patchy and diffuse loss of *cells, and periventricular atrophy*.

SPECIAL TREATMENT

Some 25 communications on general paralysis have been forwarded; malaria is being used at 72 institutions and various forms of sulphur in 20 more.

At Leicester of 88 cases treated since 1924 with malaria 27·3 per cent. have been discharged, and another 4·5 per cent have improved. Of the 43 deaths only 8 were associated with the treatment. Two of the discharged patients had been in the hospital on a voluntary basis. During last year eight men and one woman were infected by blood inoculation, and intensive courses of sulfarsenol, novarsenobillon, and bismuth were given after the malaria. Three of these patients were discharged as recovered and one was relieved. The blood from 150 new cases was tested by the Vernes method, and this test was compared with the Wassermann test. There was only one discrepancy: a known syphilitic in which Wassermann reaction was positive and the Vernes negative.

At Winwick only 12 of the 21 general paralytics admitted were in a sufficiently early stage for malarial therapy—a regrettable fact, doubly so because it seems to have been partly due to shortage of beds. An interesting report on the serological results and another on the Meinicke reaction are published from the same hospital. Induced pyrexia is being tried for several varieties of mental disorder; some hold that the fever has a specific effect, but the majority ascribe the results to psychological changes. In any case there is no doubt of the importance of using the interruption. in phantasy life to push occupational therapy. A number of studies of dementia præcox have been made; at Long Grove the effect of stimulation by carbon dioxide has been tried, and at Rainhill diathermy has been used. The histology of the digestive tract in these patients has been studied at Ewell and Colney Hatch and the endocrine function at Storthes Hall. Rainhill has concluded that there is no characteristic histopathology of the brain, and that the most constant feature is fibrosis of the solid viscera, with the kidney and spleen primarily involved.

Several hospitals have studied the ductless glands, but the Board feel that, on the whole, better value for time and labour could be obtained by studies based less exclusively on these organs. A number of clinical accounts of cases and of descriptions of special methods of treatment have also been received, and the Board wishes it had more reports on experimental psychology. Horton has presented a report on the application of psychology in the realm of psychiatry. Cardiff has studied the relationship between emotional tension, as shown by the psycho-galvanic index, and the hyperglycæmic index, and has shown a parallelism in psychotics, the variations in the hyperglycæmic index depending *not on the type of psychosis* but on the degree of emotional tension present. Prognosis, in the opinion of the Board, is worthy of more attention than it receives.

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[1] Lunacy and Mental Deficiency. The 18th Annual Report of the Board of Control for the year 1931. Part II. H.M. Stationery Office. 1932. Pp. 223. 3s. 6d.

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THE LANCET

LONDON: SATURDAY, OCTOBER 8, 1932

A SIMPLIFIED TANNIC-ACID TECHNIQUE

THE teaching that tannic-acid treatment for burns necessarily involves such elaborate armamentarium as a general anæsthetic, a spray, and a cradle, has led to a general impression that its use is likely to remain impracticable except in hospital; but its manifest advantages in preventing absorption of toxic products are sufficiently widely recognised to throw discredit on the traditional greasy applications which, while alleviating pain, do not prevent sepsis, promote healing, or diminish secondary shock. This unsatisfactory position is reflected in the lack of precision which now characterises many pronouncements on the first-aid and home treatment of burns. Such teaching must be crisp and dogmatic if it is to be remembered in an emergency, when any uncertainty may cause unnecessary suffering. The supply of a long list of alternative applications to carron oil may reflect creditable doubt whether the first-aider should any longer be encouraged to offer immediate relief irrespective of ultimate results, but is not conducive to the prompt action which is the essence of first-aid treatment. The advisory medical committee of the Industrial Welfare Society evidently recognise this, for they definitely advise householders to replace the bottle of carron oil by (*a*) a supply of dry picric-acid dressings for applying to small burns: (*b*) a bottle of picric-acid lotion for application when the skin is broken; (*c*) a solution of bicarbonate of soda (prepared by the chemist with distilled water) for cleansing a dirty wound before applying the picric dressing. A dessertspoonful of baking soda in a pint of warm water is offered as an alternative to (*c*).

In the forthcoming edition of the First Aid Manual of the British Red Cross Society a dressing with lint or linen soaked in 1 per cent. picric-acid solution is also given first place, but the discussion of other possible applications to "a slight burn of naked forearm and wrist when shock is negligible" is rather nebulous. Tannic acid is dismissed as too elaborate and difficult as a first-aid measure except in permanent first-aid posts. Simple dressing "as used for any wound" carries the rider that its removal is often painful. Carron oil is said to relieve pain but "does not keep the area free from germs." Other oily preparations are mentioned with the warning that the application of oil and grease is not desirable if other substances are at hand, "as the subsequent treatment is rendered more difficult and less satisfactory though they do relieve pain." Finally it is suggested that powders such as boric acid, flour, starch, or arrowroot, made into a paste with water, can be applied to the dressing. Should the burn be very painful or should it be necessary to search for materials for dressing, the reader is advised to put the injured part into a basin of warm water with a heaped dessertspoonful of sodium bicarbonate. Another hypothetical case of which the first-aid treatment is fully discussed is a severe burn of both thighs and knees. If the materials are at hand strips of dressing soaked in "one of the solutions previously recommended" are to be applied, but if no other dressing is available the instruction is to cut off part of the patient's shirt, wring it out in water, and put it over the burnt part to exclude the air. The object of the emphasis laid on "excluding the air" in instructions to the public in connexion with burns is presumably the diminution of pain. In this instance the advice seems unhappy, as the patient's shirt might well be contaminated with organisms from sweat or even fæces, and no more unsuitable dressing than a piece of such material soaked in water could well be imagined.

A technique of treating small burns with tannic acid that does not involve the heroic measures outlined by the originators of this method has been sought in many places. Dr. D. M. GLOVER,[1] who reports a series of over 300 cases, has used compresses of freshly made tannic-acid solution as a first-aid dressing, and has found it advantageous to dispense with the thorough scrubbing of the wound under a general anæsthetic. Mr. J. H. HUNT and Mr. P. G. SCOTT have gone a step further towards working out a technique suitable for routine domestic use. Their advice, described on another page, of reinforcing with collodion the crust which develops after the application of tannic acid, gives protection not only against mechanical damage but against infection at the edge; and the success which they have achieved, after gentle cleaning of the surrounding skin, with no more elaborate equipment than a camel-hair brush, a teaspoonful of tannic-acid powder in an ounce of water, and a moist gauze pad, should encourage the extensive trial of tannic acid in the home. Of the three methods they have used in the out-patient department of St. Bartholomew's Hospital, one, tannic acid in ether reinforced with gauze, is suitable for extensive and dirty burns, when oil or grease has been used as a first-aid dressing, or when more than 24 hours has elapsed since the accident. The second method, tannic acid in ether reinforced with gauze and collodion, results in an extra strong crust, and is advised in clean cases when an anæsthetic is needed on other grounds—e.g., in nervous patients and young children. Tannic acid in a watery solution reinforced with collodion on the third day will, it is believed by the authors, have a wide application; no anæsthetic is needed, little pain is felt, and the collodion seems to make the affected area less liable to become moist and soft under a dressing. This method is not put forward as definitive; it seems probable that modifications might be devised to avoid the necessity of removing gauze adherent to the crust. But it should serve to stimulate other attempts to adapt tannic acid treatment to first-aid conditions, and to relieve the patient's friends from the anxiety occasioned by the disrepute into which classical methods have fallen.

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[1] Surg., Gyn., and Obst., 1932, liv., 798.

THE DIAGNOSIS OF EXTRA-UTERINE PREGNANCY

IN 1851 CHARLES D. MEIGS, of Philadelphia, wrote regarding ruptured tubal pregnancy, "Who is he astute enough to discriminate betwixt all the possible causes of such phenomena with so much clearness as to warrant him in the performance of a gastrotomy for Fallopian pregnancy?" The early recognition of ectopic pregnancy, even after rupture, remains to-day one of the most difficult diagnostic problems with which the gynæcologist is confronted. In a recent paper[1] OTTO VON FRANQUÉ, of Bonn, reminds us that though there may be significant warning signs there is often no missed menstrual period, since (according to his estimate) the ovum may be embedding for anything from 7 to 18 days before the next period falls due. When bleeding occurs it is, of course, liable to be mistaken for a period, though it is often too early, but it does not cease within the time limits of a period; while in a very early intra-uterine abortion the bleeding often does cease after a few days. During all this time the enlargement of the tube is so slight as not to be palpable even by an expert examiner. The Aschheim-Zondek test may thus be useful here, for in cases of pregnancy it is usually positive a few days after the first missed period, and at any rate it is positive at a time when by no other means could the fact of pregnancy be certainly established. Unfortunately the reaction becomes negative 8–12 days after death or expulsion of the ovum, or even after three days if there has been gradual interference with the placental circulation. The reaction is therefore of value only if it is positive. If death of the ovum has occurred the gynæcologist may elect to wait rather than to operate immediately; the gradual disappearance of the positive reaction may be observed, and operation may never be necessary unless absorption is unduly slow or bleeding protracted.

FRANQUÉ believes that diagnosis of unruptured and undisturbed tubal pregnancy is possible only in isolated cases. The differential diagnosis between a tubal pregnancy and an ovum growing only in one half of a normal uterus may be confusing, but the latter condition is happily rare. A retroflexed uterus may be taken for a hæmatocele in Douglas's pouch. The indefinite boundary of a hæmatocele, its immobility, its tenderness, and the relation of the uterosacral ligaments as felt per rectum should enable the distinction to be made, especially if the examination be carried out under anæsthesia. HÖHNE, he says, has reported a case in which a still intact tubal pregnancy was diagnosed by a decidual cast of the uterus. This is usually passed only after death of the fœtus, but it may be the first cause of bleeding, and he emphasises the importance of examining carefully everything discharged from the uterus when tubal pregnancy is suspected. He states that there is always pain on the side of the pregnant tube; if the pain is right-sided appendicitis may be its cause, but since in either case laparotomy is indicated this is of little moment; a median incision should be made to allow complete exploration of the pelvis. In appendicitis the pain and swelling tend to be higher up; the leucocyte count tends to be increased; and the red blood corpuscle sedimentation rate accelerated. In uninfected ectopic both are likely to be normal. The early signs of pregnancy and the vaginal bleeding too are helpful, though it is important to note that the latter may be very slight and visible only on vaginal examination, or even through a speculum. Occasionally appendicitis and tubal pregnancy may coexist, and there may be a causal relationship between them. In diagnosis between appendicitis and inflammatory tubes on the one hand and extra-uterine pregnancy on the other, pulse and temperature are of little use, as both may be little raised or even quite normal; but a high temperature excludes a simple non-infected ectopic, whereas complete pulse loss can occur without any internal bleeding in perforating peritonitis.

When a catastrophic rupture of a pregnant tube has occurred the signs are usually characteristic: peritoneal shock, abdominal pain and meteorism, small and rapid pulse, air-hunger, faintness, and pallor. Shoulder pain may be present, but may also occur in appendicitis and cholelithiasis. There is usually dullness in the flanks, but fluctuation is absent on account of the coagulation of the effused blood. If a woman in previously good health is suddenly seized with severe abdominal pain accompanied by meteorism, loss of pulse, pallor, coldness of the extremities, giddiness, and faintness the surgeon's first thought should be ruptured ectopic; no time should be lost in attempts at differential diagnosis but immediate laparotomy carried out. Although ruptured ectopic is the most likely finding the lesion may be a perforating peritonitis of any kind, torsion of an ovarian tumour or of a myoma, or one of the rarer causes of intraperitoneal hæmorrhage. A case has been recorded in which the doctor mistook the ruptured ectopic for acute poisoning and applied the stomach pump. As to treatment, FRANQUÉ holds that if the patient is not acutely ill expectant measures may be adopted at least for a time—bed, ice-bag to the abdomen, and possibly ichthyol and glycerin tampons to the vaginal vault. Should the swelling increase or the patient's condition deteriorate, operation must be immediately undertaken. He condemns the use of protein shock therapy to hasten absorption and also exploratory puncture, whether through the vaginal vault or abdominal wall. This measure should never be adopted by the practitioner, and only exceptionally in hospital, and never without all preparations made for immediate operation.

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[1] Medizin. Klinik, 1932, xxviii., 989.

In this connexion it is interesting to note that KURT KAISER,[2] while not condemning exploratory puncture so wholeheartedly as FRANQUÉ, also emphasises that it must be done with all aseptic care, and only as a preliminary to immediate operation. If blood is aspirated laparotomy must be performed, though the aspiration of blood is no certain indication of a ruptured ectopic. In one of his cases the blood was obtained from a tube into which hæmorrhage had occurred because of a twisted pedicle.

THE MOUTH-BREATHER

NASAL obstruction is generally regarded as an important factor in the production of deformities of the palate, dental arches, jaws, and face. But there are some who dispute this view, and their arguments were ably presented by Mr. WARWICK JAMES and Mr. SOMERVILLE HASTINGS, in opening a discussion at the Royal Society of Medicine.[3] They emphasise the well-known tenacity with which young children cling to breathing through the nose in spite of difficulties; as it is easier to draw a deep breath through the open mouth than through the nose, the urge to nasal respiration is probably physiological, and they hazard the suggestion that variations of species, acquiring the easier habit of mouth-breathing, may have been wiped out by intercurrent disease, having lost the valuable function of the nose in protecting the individual from throat and lung affections. As an instance of the powerful urge to nasal breathing, they quote the case reported by C. W. RICHARDSON of an infant born with bilateral occlusion of the posterior nares, who was only kept alive by relays of assistants holding the lips apart until, by the end of the second week, the baby had learnt to breathe through the mouth; RICHARDSON, indeed, suggests that some infants, who never breathe and are stillborn, are instances of this deformity. Patients who have complete nasal obstruction from this cause have, in the majority of cases, high-arched palates, but they seldom suffer from deformities of the face or nose, nor, it may be added, from chest deformity or catarrhal diseases of the ears; they take perforce entirely to mouth-breathing, and escape the changes which result from respiration through a partially obstructed passage, or from infection, or from both these causes. On the other hand, marked changes in the nose and face are not infrequently associated with partial nasal obstruction. The theory that these are due to disuse of the nose during growth is negatived by their absence in complete congenital obstruction. A second theory suggests that, during normal respiration, there is a rhythmic increase and decrease of air-pressure in the nose, which acts as a stimulus and is absent in nasal obstruction; but this also is absent in complete congenital occlusion.

Mr. JAMES and Mr. HASTINGS hold that deformities of the nose and face are the cause of nasal obstruction rather than caused by it; but their failure to provide a satisfactory explanation was not regarded by Mr. E. B. DOWSETT, who presided over the section, as adequate reason to invert the usual arrangement of cause and effect; the relationship of obstruction to these deformities still remains obscure. Mr. JAMES and Mr. HASTINGS believe that the deformities are caused, not primarily by nasal obstruction, but by failure to close the mouth, either anteriorly or posteriorly, at what they term the two sphincters of the cavity. This they consider due most commonly to failure of muscular control; as corroboration, they found a history of severe illness or operation in infancy in half of the 52 cases examined. Of other causes, conditions demanding a rapid respiratory exchange, such as pneumonia, may initiate a habit of keeping the mouth open, as also may imitation of other members of the family, or a faulty position of the head. It must be admitted, however, that these considerations are not very convincing. Their description of the manner in which the palate and jaws are moulded by forces acting on them when the mouth is closed follows more usual lines and, in their opinion, the most important factor is the negative pressure produced within the closed mouth and maintained by the action of the tongue. Contrary to general opinion, they hold that nasal obstruction is rarely caused by adenoids, and support this view by the statement that most of the children who are diagnosed to have adenoids and benefited by operation have a mass of lymphoid tissue in the nasopharynx of such a size that it would not cause obstruction. They seem to have overlooked the probability that a small non-obstructive mass, when infected, may produce swelling of the adjacent nasal mucous membrane, and thus become an effective cause of obstruction.

SUNSHINE IN HOSPITALS

THE Royal Institute of British Architects recently appointed a Joint Committee on the Orientation of Buildings, and its report has now been published in the *Journal* of the Institute. The committee, the chairman of which was Mr. P. J. WALDRAM, F.S.I., in addition to architects, included representatives of the Board of Education, the Ministry of Health, the Building Research Station, and Sir LEONARD HILL, formerly director of the department of applied physiology at the National Institute for Medical Research. In the section of the report dealing with hospitals regret is expressed that the medical profession "has failed to bring sufficient pressure upon hospital authorities and hospital architects to secure the provision of solaria in which sunshine on the beds of patients can be used as a curative rather than as a restorative agency." Hospital planning, it is added, "has, with few exceptions, become standardised, not to say crystallized, or even fossilised, into the familiar ward with its long axis running north and south with windows on each side facing east and west between beds placed at right angles to the external window walls. Hospital wards are still planned with over 60 per cent. of the external wall space taken up by solid brick-work and the windows so spaced that the patients receive the minimum of sunshine."

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[2] Ibid., 1932, xxviii., 1057.

[3] Section of Odontology, to which members of the Section of Laryngology were specially invited. See THE LANCET, 1932, i., 936. The opening paper appears at length in the Jour. Laryng. Otol., September, 1932, p. 614.

With this arrangement the committee contrast one that has been adopted in Copenhagen whereby hospital beds are placed parallel to the wall in groups of four. This has, they say, a further psychological value in that, instead of lying in a long ward and seeing all day and every day a large number of comparative strangers in a state of ill-health, the patient is in a small group of four or six with whom he can feel at home so far as his illness may allow. The report omits to mention how, largely on the initiative of Mr. L. G. PEARSON, F.R.I.B.A., this lengthways arrangement of beds has been creeping into new hospital designs in this country, where a further development has been the erection of wards with a few piers along the walls and long sliding windows which fold together. In suitable weather the whole sides of the wards can be opened up, allowing for the free and full ingress of sunshine and air. The actual amount of solid wall mass is thus only 8 per cent. of the wall surface, instead of 63 per cent. as in the older type of wards. After careful investigation the additional cost of maintaining the necessary minimum temperature in view of the larger window space is found to be immaterial, and supervision is not interfered with. A material advantage of this type of "veranda" ward is the elimination of balconies in many-storied hospitals, which both shade and obstruct the windows of lower floors. It is, however, pointed out that the maximum admission of sunshine must be considered in due relation to other considerations material to the efficiency of a hospital as a whole, remembering always that in certain mental cases and in hospitals for the treatment of advanced cases of pulmonary tuberculosis exposure to direct sunshine may be undesirable.

The committee insist that it is essential in the design of hospital wards that architects should confer freely with the medical staff and ascertain the number of beds or wards which should be designed for cases where full insolation is undesirable. Clear and simple methods of predetermining generally and of testing in detail the insolation of wards and other units should be invaluable to architects engaged in hospital planning. The committee conclude that the proper orientation of hospitals may be considered as governed by the following general factors: (1) the type of disease which it is desired to treat; (2) the best type of ward to meet (1); (3) the best spacing between ward and other buildings; (4) the desirability of choosing sites and lay-outs which will secure proper orientation for all the various units.

ANNOTATIONS

THE PLIGHT OF TYPOGRAPHY

THE announcement made last week by *The Times*, that it was about to embody the results of two years' research and reorganisation in a new type especially designed for its own use, serves to emphasise the difficulties which beset, and which have hitherto almost prevented, all scientific progress in the underlying problems of typography. To the manifold scientific difficulties inherent in typography have been added others, not only practical and economic, but arising from the prejudices of numerous printing "experts" who have been accustomed only to the historical, artistic, and literary approach. The difficulties were examined, and the complexities of the problem of legibility were comprehensively set out, for the first time in the report on "The Legibility of Print," published by the Medical Research Council in 1926.[1] The author, Mr. R. L. Pyke, concluded that only the grossest typographical differences affected legibility, strictly so-called; and that habit, æsthetic, and associative considerations accounted for the greater part of a reader's reaction to a type-face. These conclusions appear to support, not the traditional, "artistic" printer, with his purely personal reactions, on which he too often and quite illogically dogmatises, but the need for further experiment and scientific study. The new type of *The Times* is not, it must be admitted, especially pleasing at first glance; but this proves nothing. Every psychological experimenter knows how quickly laboratory habits can be formed by subjects and how unreliable as a permanent index are introspective reports upon first reactions to a new stimulus. In so far as any evidence worthy of the name can be invoked, it goes to show that type such as that introduced by *The Times* is desirable. We say desirable of set purpose, for it may prove that the concept of "legibility" will have to be discarded, and that it will become impossible to say more of a type or publication than that it possesses in definite measurable degree this or that characteristic. For instance, the degree of contrast between "thicks" and "thins," the length of line, and the texture (not colour) of the paper, are problems which seem likely to yield fairly reliable answers to scientific experiment long before the compound problem of legibility itself. For, unlike legibility, each of these factors can be conclusively defined, and can be shown, if varied, to increase or decrease some relevant reaction in the reader; thus contrast affects speed in reading and also the tendency to confuse similar letters; length of line may be responsible for hesitancy in reading due to focus alterations and fatigue in eye movements; while glossiness of paper influences rapidity and fatigue in fixation and accommodation. Glossy paper, whatever its virtues, makes print invisible at points; it increases glare, and by acting like a mirror it disturbs the accommodation of the eye.

Legibility, as understood by the ordinary reader—indeed the very appearance of a type-face—can be as much affected by accidental factors that do not even arise in the theoretical or æsthetic problems of design, as by intentional variations in the character or size of the type-face itself. It is easy to convince an ordinary person that he is reading different types when two pages are set in the same type, but one is over-inked, the other under-inked, one is on soft fluffy paper, the other on hard glossy paper. Indeed, there may actually be a greater difference in such a case than where the two types chosen are actually different.

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[1] The Legibility of Print. By Richard L. Pyke, M.A. Med. Research Council, Spec. Rep. Series No. 110. London, 1926.

It is not surprising if the influence of legibility cannot be isolated or measured. Refinements in design and a classical pedigree contribute less to typographical progress than an experimental attitude, freedom from affectation, and a high standard of production among those actually engaged in the printing industry.

VENOCLYSIS FOR ALIMENTARY TOXICOSIS

DIARRHŒA and vomiting in the infant, whatever may be their original cause, produce a clinical picture which has been well described as "alimentary toxicosis"; it is accompanied by dehydration, impaired circulation, and in many cases by a true acidosis. The method of treatment recommended by Karelitz and Schick at the last session of the American Medical Association[1] is based on the assumptions: (1) That the diarrhœa and vomiting, when once established, are symptoms of a non-specific hypersensitivity of the gastro-intestinal tract; even water given by mouth may act as an irritant and increase the diarrhœa and vomiting. (2) That dehydration is a secondary symptom and the diseased cell is unable to retain either water or salts; the suppression of urine which tends to follow the excessive loss of fluid by the bowel results in turn in an accumulation of katabolic products in the blood. (3) That the toxic symptoms of the disease are therefore at least aggravated by dehydration; the rationale of prolonged administration of fluid by the intravenous route is thus to rest the gastro-intestinal tract and to combat dehydration as effectively as possible. To infants exhibiting the picture of toxicosis these authors accordingly give as a routine a 5 per cent. solution of dextrose in normal saline intravenously, 100–200 c.cm. rapidly in 15 to 20 minutes, the flow being then reduced to 15–40 c.cm. per hour (5–10 drops a minute). The total daily amount of fluid given was about 60 c.cm. per lb. of body-weight, and in addition 75–150 c.cm. citrated blood was transfused as soon as possible after the venoclysis was started, 1–2 c.cm. of epinephrine (1 in 1000) being added to 250 c.cm. of the dextrose solution in order to improve the circulation. For the first 12 hours of treatment no fluid is given by the mouth except enough to moisten the mouth and pharynx, after which 10–20 c.cm. of water is offered every two hours. A two-to-one mixture of milk and water with 5 per cent. added dextrose is allowed when detoxication seems complete, and in no case before the end of 36 hours. Starting with 5–10 c.cm. of the mixture two-hourly, the amount is increased by 5–10 c.cm. at each feed for the next three or four days, a similar addition being then made every two or three days. The venoclysis is discontinued only after all signs of toxicosis have disappeared, and the whole routine is repeated if symptoms recur. The authors emphasise the importance of reducing examination and manipulation of the patient to a minimum; body temperature is measured in the axilla in preference to the rectum. The technique of prolonged venoclysis necessitates fastening the arm or leg used to a padded splint which in turn is fastened to the bed. After the vein has been exposed under local anæsthesia, a Lindeman (No. 18 or 19) cannula is introduced and tied in with catgut ligatures. The fluid is given from a gravity outfit with rectal drip bulb and a thumbscrew clamp. The period of venoclysis varied from 9 to 150 consecutive hours—usually from 36 to 72—and in only about one-third of the cases was a second insertion of the cannula necessary on account of clogging.

Whilst the technical difficulties of such a method of treatment may limit its applicability, the results obtained by Karelitz and Schick are extremely encouraging. In the last two and a half years only 6 of 53 cases so treated died—a mortality of 12 per cent. to be compared with an average mortality of 64 per cent. for the preceding ten years at the same hospital.

THE HISTORY OF THE C.D. ACTS[1]

THE history of the Contagious Diseases Acts is well outlined in a short life of that humane reformer, James Stansfield, which has just been written by the authors of the valuable pieces of social history entitled the "Town Labourer" and the "Village Labourer." Stansfield, whose memory is universally respected as a Victorian champion of sex equality, made his mark in the House of Commons immediately upon his election in 1859, obtained office three years later, lived down a furious agitation against him for his generous but indiscreet relations with Mazzini, and in 1871 obtained Cabinet rank, under Gladstone, as President of the Poor-law Board. Local government was at this period a subject of anxious consideration among the forward thinking, of whom Stansfield was a leader, and during his work for the reform of the poor-law, where he displayed his views on sex equality, he became intensely interested in the working of the Contagious Diseases Acts. These Acts came into force in 1864, with the well-meant intention to check the ravages of venereal disease among soldiers and sailors on the continental plan of *maisons tolerées*. The working of the Acts was soon seen to be open to abuse, and to be attended with gross persecution of a particularly helpless class; none the less the public value of the Acts was insisted upon by the majority of the public, and those who made the attempt to obtain their repeal found their task an extremely difficult one, and their words and actions subjected to persistent misrepresentation. The bitterness of the struggle was maintained by tactlessness and exaggeration on both sides, and it was 12 years before James Stansfield and Josephine Butler saw the cause which they led with such devotion finally triumph. This short book records a noble piece of social work, and Stansfield emerges from its pages as a brave and good man, able to discharge practical work without any faltering with his conscience.

GLYCÆMIA IN HEALTH AND DISEASE

MANY observations have been made on the behaviour of the blood-sugar in fasting healthy individuals and on the shape of the curve obtained by charting estimations of glucose tolerance in healthy persons and those suffering from various disorders. But these observations are widely scattered through medical literature and they have often been made upon relatively small groups of subjects suffering from a particular type of disorder. Dr. Birger Enocksson, working at the Serafimer Hospital in Stockholm, has done a useful piece of work in making an extended series of similar observations.[2] The investigation included a study of the fasting blood-sugar levels over long periods in health, which he found to be remarkably constant, and of the alterations brought about both in health and disease by the ingestion of a gramme of glucose per kilo of body-weight, and by the injection of 1 mg. of adrenaline. His observations help to bring into proper perspective a large number of facts already known. Their principal interest, however, lies in the demonstration of the relationship between the glycæmia produced by the ingestion of glucose and that produced by the injection of adrenaline. In the healthy subject Dr. Enocksson found that the injection of adrenaline produced a far greater and more enduring glycæmia than that brought about by the ingestion of glucose; on plotting curves of the response in the usual manner that for adrenaline rises above and extends beyond that for oral glucose; this space he calls the "positive adrenaline area." In many morbid conditions, all having the common factor of cachexia or toxæmia, it was found that some degree of hyperglycæmia existed even in the fasting subject; in gastric carcinoma in particular, the fasting blood-sugar was often found at a level which, on the face of it, would have justified a diagnosis of diabetes, and the glucose-tolerance curve was higher and longer though never showing the typical plateau of diabetes. That this hyperglycæmia was not very characteristic of malignancy was shown by the finding of a very similar state of affairs in simple peptic ulcers and in a variety of other conditions, infective and non-infective alike, but all having the common factor of toxæmia or cachexia. The hyperglycæmia in all these morbid conditions differed from that of healthy individuals in that the blood-sugar was raised to a higher level by oral glucose than by adrenaline; that is to say, in contradistinction to the state of affairs in the normal subject the "adrenaline area" was negative—a fact which appears hitherto to have escaped recognition. It may not prove of much diagnostic value, but it serves to draw attention to the effect of adrenaline in altering the glycæmic response in conditions associated with toxæmia or cachexia, and to the danger of attaching importance to such alterations apart from their value as evidence of toxæmia.

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[1] Karelitz, S., and Schick, B.: Jour. Amer. Med. Assoc., July 30th, p. 366.

[1] James Stansfield. By J. L. and Barbara Hammond. London: Longmans, Green and Co. 1932. Pp. 312. 15s.

[2] Acta Medica Scandinavica, Suppl. xlv.

B C G VACCINATION OF PIRQUET-NEGATIVE NURSES

THE Pirquet-negative probationers of the Ullevaal communal hospital in Oslo, whom Dr. J. Heimbeck has been inoculating with B C G since the beginning of 1924, are becoming objects of world-wide interest. In the period Jan. 1st, 1924–August 1st, 1931, 454 probationers were found[1] to be Pirquet-positive and were therefore not inoculated. Twelve of them (2·6 per cent.) subsequently developed signs of active tuberculosis. In the same period there were 253 probationers who, though found to be Pirquet-negative, were not inoculated with B C G. Among them there were 75 (29·6 per cent.) who subsequently developed signs of active pulmonary tuberculosis. A third group of 207 probationers in the same period were found to be Pirquet-negative and were inoculated with B C G. Twenty-one of them (9·6 per cent.) subsequently developed signs of active tuberculosis. The subcutaneous injections of B C G did not have a uniform action. Even on one and the same day, with the same dose and the same solution, the persons inoculated reacted differently; and while during certain periods the B C G was potent, it seemed to be partially or wholly inert at other periods. A striking difference was observed between the subsequent tuberculosis morbidity of those probationers who became allergic and Pirquet-positive after inoculation, and of those who did not. Among the 88 in the first category there was only 1 who subsequently developed signs of active tuberculosis, whereas there were 16 cases of tuberculosis developing among the 60 not rendered Pirquet-positive by the B C G. It should be noted that there were 4 other cases of active tuberculosis developing among the 43 probationers who were not included in this calculation for lack of adequate observation or the 16 in whom the Pirquet reaction was doubtful. As it may be assumed that all these probationers were exposed to the same risk in the course of their duties, Heimbeck is inclined to conclude that (1) the allergic properties and local action of B C G are variable, and (2) only those probationers who become allergic in response to inoculation develop immunity to tuberculosis.

SHORTNESS OF BREATH

THE search for some objective explanation of the feelings associated with shortness of breath has long been unsuccessful. In a recent paper[1] Prof. O. Bruns and Dr. R. Herbst arrive at some interesting conclusions from their study of the alterations in the functions of the lungs in certain chronic pulmonary disorders. They first investigated, with a recording spirometer, the lung volumes, volume of respiration per minute, oxygen consumption, and the respiratory rhythm of a series of patients falling into three groups, according as they were afflicted with emphysema, with asthma, and with bronchitis. Their findings confirm those of previous workers, since they observed increased residual air and increased minute volume in emphysema, and reduced vital capacity in asthma, with increased frequency of respiration even at rest, so that with a low tidal air the minute volume of respiration is brought up to or even above normal. A prolongation of the time of expiration they found to be common to all these conditions and indeed almost always to accompany dyspnœa. Similar spirographic measurements were carried out while light work was being performed. Minute volumes rose just as in normal subjects, but the oxygen intake in unit time was less than in normal controls with the same amount of work and a greater oxygen debt occurred. The investigation of these patients in detail, however, presented many difficulties, including the satisfactory elimination of psychical factors. An attempt was therefore made to imitate the mechanical disadvantages under which patients with emphysema and asthma suffer. For the former group healthy subjects wore a broad band round the chest fixed in the extreme expiratory position; to imitate the difficulty experienced in asthma narrowing of the air-passages in the apparatus was arranged to hinder expiration. These models gave the same type of readings on spirographic investigation as their originals. A further experiment showed that on heavy work such subjects broke down much earlier from dyspnœa than normal controls, although the oxygen deficit was not unduly high, and the authors conclude that a reduction in oxygen intake is not the cause of such dyspnœa. Following their observations on the prolonged expiration time found in all their experiments with patients and models they set about disciplining the breathing during work. The subjects were encouraged to breathe in and out slowly and deeply and although the ventilation and the oxygen intake were actually less than with the natural uncontrolled breathing the breakdown at work came considerably later. The authors therefore concluded that the dyspnœa in chronic pulmonary disease was probably not due to any interference with ventilation or with gaseous exchange in the lungs, but was intimately connected with the prolongation of expiration. This led to a consideration of what effect such alteration in respiratory rhythm could have upon the circulation, and the conclusion is reached that prolongation of the expiratory phase will interfere with the venous return to the right side of the heart and hence cause congestion in the tissues. This in turn will produce some alteration in the hydrogen-on concentration of the blood around the cells of the respiratory centre, a conclusion already reached by Prof. F. R. Fraser[2] from a study of the blood gases. ncreased respiratory effort follows the stimulus f such a change in an individual already experiencing ome resistance to normal respiration. The greater uch resistance, the longer the expiration time and he greater the change in the centre. In this vicious ircle lies the cause for the subjective feeling of dyspnœa. Prof. Bruns and Dr. Herbst believe that by disciplining the breathing so as to equalise the inspiration and expiration time the vicious circle can be broken and dyspnœa relieved. On this basis various empirical systems of breathing exercises have already been devised.

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[1] Norsk Magasin for Laegevidenskaben, May, 1932.

[1] Münch. med. Woch., August 26th, p. 1385.

LUMBAR PUNCTURE IN NEUROSYPHILIS

At the Fournier centenary congress held in Paris ast May the problem of neurosyphilis was discussed, and a resolution was unanimously passed expressing the opinion of the congress that lumbar puncture was the best method of investigating the state of the nervous system in the earlier stages of syphilis, and that every syphilitic should have his cerebro-spinal fluid examined at some definite time after his infection. In a recent paper Ravaut[3] has given his opinion that the time at which one can learn most from this examination if, as is usually the case, it is only practicable to do one lumbar puncture, is the end of the third year. This opinion is based on 30 years' experience of lumbar puncture in the early stages of syphilis.

The abnormalities in the cerebro-spinal fluid may concern the cell count or the protein only, or these may be combined with positive Wassermann and colloidal reactions, forming what Ravaut calls a "complete reaction." The latter he considers as indicative of meningo-parenchymatous lesions, the intensity of which may be judged from the nature of the cerebro-spinal fluid changes. When the cell count only is increased, it is probable that only the meningo-vascular system is attacked, whereas an excess of protein (which is usually associated with positive colloidal reactions) is evidence rather of a parenchymatous lesion. His experience has confirmed what is now generally recognised—namely, that an increase in cell count and protein is commonly found during the early months of syphilis, but that the majority of these reactions disappear either spontaneously or under treatment without being accompanied by any clinical neurological sign. The minority are more intense and persistent, and these may be divided into two main groups :—

(1) Those in which no clinical symptoms make their appearance, but which persist for months or years. In such cases post-mortem examination may show evidence of old-standing lesions of the nervous system. Occasionally a slight clinical sign, quite disproportionate to the pathological lesion, makes its appearance in such cases.

(2) Those in which the cerebro-spinal fluid reactions increase progressively and persist, and in which, after a latent period of varying duration, the clinical signs of a severe neurological disease make their appearance. To this type Ravaut gives the name "pre-clinical."

It is on these two types of reaction that attention should be chiefly focused, as they provide definite evidence of involvement of the nervous system. And, as the great majority of the more ephemeral reactions have disappeared by the end of the third year, it follows that a lumbar puncture performed at this time is more likely to give trustworthy information than one which is performed at an earlier period.

Ravaut has also produced evidence to show that neurosyphilis becomes progressively less latent, that is, less confined to changes in the cerebro-spinal fluid, the further from the time of infection the case is followed. Of the patients in whom cerebro-spinal fluid abnormalities were found at any period, only 5 per cent. of those examined during the secondary stage showed any clinical evidence of neurosyphilis, whereas from the end of the third year onwards the proportion gradually rose so that between the seventh and eighth years half showed clinical signs, and at the tenth year only one-fifth remained of a latent form. He considers therefore that an examination of the cerebro-spinal fluid becomes progressively less imperative after the end of the third year from the date of infection, although it may still be necessary when any neurological sign, however trivial, makes its appearance.

ACCIDENTS FROM DISINFESTATION WITH HYDROGEN CYANIDE

Although the destruction of rats and insect pests by fumigation with hydrogen cyanide is now widely practised on sea-going vessels, this fumigant has been little used in dwelling-houses, at least in this country. For certain purposes, as for instance the destruction of mites in furniture, it is the only sure method, and it has many advantages in the eradication of parasitic insects; but obviously the risk to human life is great and the fumigation should be carried out with meticulous precautions. Dr. F. M. Messerli,[1] has recently drawn attention to two deaths which occurred in Lausanne following upon fumigation with hydrogen cyanide for the destruction of bugs. In one case the operators had apparently taken no precautions to ensure that access to the fumigated flat was prevented during the preliminary period of airing, prior to thorough ventilation; in the other, the gas, which is highly diffusible, found its way through cracks in floors and ceilings to a lower flat and caused the death of one of the occupants. Messerli draws attention to the risk of retention of the gas in water, moisture, bedding, cushions, hangings, and foodstuffs, and he lays special emphasis upon the impossibility of limiting the field of action of the fumigant in tenement buildings, although this can apparently be done on ships. He cites ten instances of poisoning in Paris, reported by Kohn-Abrest, and advocates universal prohibition of hydrogen cyanide. In his opinion sulphur dioxide is sufficiently lethal to pests, and is far preferable in view of the lesser risk to human life. In this connexion we may note that sanitarians in British ports have not ceased to rely upon sulphur for the fumigation of ships, and that in other countries, where sulphur dioxide had fallen into disrepute, a more favourable opinion of its efficacy is gaining ground. The point still to be settled is the reliability of sulphur dioxide as a destroyer of the eggs of parasitic insects, a subject which was touched upon at a meeting of the Royal Sanitary Institute[2] some years ago, and is being investigated afresh by Dr. W. C. Gunn at Glasgow. The question deserves further consideration in this country because the danger to life from the indiscriminate use of hydrogen cyanide is far from negligible.

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[2] The Lancet, 1927, i., 529, 589, 643.

[3] Ravaut, P.: Le Monde Médical, 1932, xlii., 763.

[1] Schweiz. med. Woch., 1932, lxii., 880.

[2] Jour. Roy. San. Inst., 1925, xlvi., 286.

LEEDS THEN AND NOW

IN 1836, when the Municipal Corporations Act of the previous year came into force, the members of the Leeds town council, elected for the first time by popular vote, were mostly men with no experience of municipal administration. In an earnest endeavour to learn what tasks lay before them—and possibly appalled by the condition of the town—they did a very sensible thing and appointed a committee to make a survey. This report, which appeared in the *Journal* of the Royal Statistical Society, has now been reprinted with a foreword by Mr. Councillor Hawkyard, chairman of the mental health services committee and Lord Mayor in 1930–31. As a picture of town life early last century, with its commencement of the industrial era, and its rapid multiplying of the population, it makes interesting reading, and shows what enormous progress has been made in a relatively short space of time. Populous districts of the town were wholly without sewers; in rows of houses the cellar dwellings (of which there were over 500) were seldom dry; the conditions of the streets were indescribable, many of them being recorded as—

> "Deficient in sewerage, unpaved, full of holes, with deep channels formed by the rain intersecting the roads and annoying the passengers; some ill-lighted, and some without lamps; with cellars sometimes so dangerously exposed that passengers are liable to frequent accidents; and sometimes rendered untenable by the overflowing of sewers and other more offensive drains; with ash-holes, &c., exposed to public view, and never emptied, or being wholly wanting, as is frequently the case, the refuse is accumulated in cellars, thrown into the streets, or piled against the walls."

In addition, nearly one-half of them were weekly so full of lines and linen as to be impassable for horses and carriages, and almost for foot-passengers. Public conveniences are "uncleansed because it is nobody's business," and as "everybody's perquisite, they become offensive in the highest degree." It is a picture which some modern critics of bureaucratic control might well pause to consider. Overcrowding was rampant; instances are given of five to six persons in each bed—"and there are generally two or three." One conclusion was certain, "that the greater part of the town is in a most filthy condition, which demands an immediate remedy."

Actually very little was carried out for many years. The council made application to Parliament for powers, the Leeds Improvement Act of 1842 being the result, but, Mr. Hawkyard concludes, "the council evidently became alarmed at the cost of the proposal, for very little was done by way of improvement until the council appointed a medical officer of health in 1866." Crime, religious accommodation, education, physical condition, occupational mortality, and the differential birth-rate all came under the eye of this committee. Their statistics of the size of family are of some interest. In 1925 the medical officer of health for Leeds drew attention in his annual report to the "disquieting significance" of the falling birth-rate, the fall, as is well known, not being equally distributed over all sections of the community. "It is from the poor that the population to an ever-increasing extent is deriving its recruits," he writes, "which means that the average fitness of the individual units is slowly but surely declining." Nearly a hundred years before his predecessors concluded that "thus it is evinced that the greatest proportion of births takes place among the lowest class; next among those employed in outdoor handicraft; then among indoor handicraftsmen; then among tradesmen; and lastly among independent and professional people." And this was before the popularisation of methods of contraception at whose door the differential birth-rate is so often entirely laid.

Leeds is not to-day without its particular and urgent problems, as perusal of its annual reports, and especially of such sections as that on smoke abatement will show. But in a little under one hundred years it has, in common with all England and Wales, travelled a long way in the endeavour to supply the amenities of life and the health essential to their enjoyment.

AN INDEX OF TOXIC DEGENERATION IN POLYMORPHS

THAT in states of toxæmia the cytoplasm of the polymorphonuclear cells undergoes more or less characteristic changes has long been recognised; they were carefully studied by Turck, and a description of them may be found in his "Vorlesungen über klinische Hæmatologie" (1912). The changes consist mostly in irregularity of the cell outline, increase in size and in basophilic tendency on the part of the cytoplasmic granules, and vacuolation. Various attempts have been made to assess the value of these changes in following the course of infective conditions, and lately M. S. Kugel and Dr. N. Rosenthal,[1] working at the Mount Sinai Hospital, New York, have investigated the use of the Schilling "hæmogram" and combined with observations on the degree of this toxic change. To secure a numerical expression of the amount of change they made use of the "degenerative index," obtained by dividing the number of polymorphs showing toxic change by the total number of these cells counted; the more severe the infection and the greater the degree of toxæmia the higher the index should be. For the identification of the toxic changes they found Jenner-Giemsa stain the most suitable. They regard the degenerative index as useful in itself, but its greatest value, they believe, is as a supplement to the hæmogram. The latter gives information as to the degree of maturity of the polymorphs and is some index to the urgency of the call upon the bone-marrow for their production. It gives, however, no information as to the nature of the call; a "shift to the left" may be produced either by an acute infection or by hæmorrhage. Such information is supplied by the degenerative index.

THE Murphy Oration of the American College of Surgeons will this year be delivered by Sir William Wheeler, past president of the Royal College of Surgeons in Ireland. The annual clinical congress at which it will be given opens at St. Louis on Oct. 17th. On leaving Dublin last week Sir William received presentations from Mercers Hospital and the Ministry of Pensions' Hospital, and from the City of Dublin Nursing Institution, of which he is chairman.

Dr. G. C. Anderson, deputy medical secretary of the British Medical Association since 1919, has succeeded to the post of medical secretary upon the retirement of Dr. Alfred Cox. Before joining the central staff of the Association, Dr. Anderson had considerable experience in general practice in Fifeshire, and was medical superintendent of the Wemyss Memorial Hospital. As a student of the University of Edinburgh he distinguished himself in several branches of athletics, and held the Scottish long-jump and hurdles championships. During the late war he was surgeon specialist to the 69th General Hospital in Egypt and in Palestine.

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[1] Amer. Jour. Med. Sci., 1932, clxxxiii.

OPENING OF THE MEDICAL SCHOOLS

THE winter session opened last week with inaugural addresses at several of the London medical schools. Below we publish extracts from three of them. Dr. le Fleming spoke at St. George's, Prof. Halliday at Charing Cross, and Dr. McAlpine at the Middlesex Hospital.

THE GENERAL PRACTITIONER

BY E. KAYE LE FLEMING, M.B.
CHAIRMAN OF THE REPRESENTATIVE BODY, BRITISH MEDICAL ASSOCIATION

SOME day and somehow the health services of the country must be bound together in such a manner that every citizen of the State can obtain a full medical service in his home, or in an institution, where every resource of medical science will be at his service at a cost within his individual means. There is evidence enough that such provision can only be secured by some form of insurance, but the ultimate success of any such health machinery must depend on maintaining unimpaired the intimate personal relationship between doctor and patient which is the root principle of medical practice to-day in this country. In other words, it must be built up on a general practitioner basis.

I would plead to-day that the teaching hospitals should pay special attention to the needs of those students who intend to engage in general practice.

Have you ever considered the relation between the student and his teachers in this respect? Three-quarters of the students of a hospital will pass into general practice, and in the whole course of their preparation for this career, never once have they been taught or examined by anyone who has had experience in this kind of work. Is it not time that this fact was faced? If the answer is that the existing system is the best, let us at least know the reason why.

I hold that there is no better service that you can render to the public and the State than to turn out a good type of G.P., and I would like to see medical education primarily directed to this end. And I venture to ask this question. Could not the altered outlook I have mentioned possibly afford some solution of the curriculum problem? The medical student spends much time over detail which is of no real use to him as a general practitioner, and this time could be spent with advantage on subjects a knowledge of which is essential in general practice and which at present he has to acquire after he has qualified.

It has always seemed to me an anomaly that in an institution like St. George's, which in a sense is a factory engaged in large measure in producing the best type of general practitioner, there should be no place on the staff or in the teaching machinery for a general practitioner *as such*. A knowledge of general practice would be of definite advantage to every member of the profession whatever his specialty; but if there is one class more than another to which this applies it is to those who teach and examine our students. The difference between hospital and general practice is wide and important, and I am sure that something could be done to prepare the newly qualified for the difficulties he will have to face in general practice. Somewhere in the out-patient department, especially, there would seem to be room for a general practitioner's special knowledge, not only in a teaching capacity but possibly as an aid to a sifting process which would help to ensure that abuses of the department were checked. Whether such facilities, if available, would appeal to the student, experience alone can determine, for the natural aim of the student is to pass his examination, and he will look upon any case in the light of its value for examination purposes rather than its practical utility in his later career. The line of distinction, however, is not, after all, clear cut, and I am convinced that an experiment on these lines is worth while.

I would also make a strong appeal for special instruction in National Health Insurance work. It seems hard to believe in, and still more to defend, a system which ignores completely, in its teaching capacity, a State contract which every registered medical man is free to join the moment he is qualified, which, as I have stated, has been entered into by 15,000 doctors at the present time. Luckily in this case a few lectures can cover the most important difficulties, such as the regulations governing certification, prescribing, and record keeping. This service offers a quick entry into general practice, and I often think that the service is least understood by those of our own profession who are outside it. The old idea that the panel service is a step towards a whole-time State medical service is the exact opposite to the truth. It is, in fact, our greatest safeguard against it. It is a recognition by the State that a general practitioner service with free choice as between doctor and patient is the best system of medical attendance. The service should have the sympathy and goodwill of every member of the profession, for the most obvious reasons. If I am wrong in the view I hold, then I say the profession has been put to the test and failed, and that a State medical service, with the inevitable cleavage of the profession into factions, is the only possible line along which to expect future development.

At the present moment the State is committed to supply a general practitioner service to some 15,000,000 of the population of England, Scotland, and Wales, and has contracted with nearly 15,000 doctors to that end. The National Health Insurance service, though not without its imperfections, has been and is a success, though it works least satisfactorily in densely populated areas. Like so many institutions in this world (such as married life) you hear all about its failures and little enough of its success. It is not sufficiently recognised that National Health Insurance is a great scheme of *preventive medicine*. The doctor has every inducement to keep his patients well. The general practitioner is growing a little tired of having the words preventive medicine continually put to him as something new that he has never thought about. Preventive medicine means nothing more than the education of the public in the art of keeping well. The general practitioner has been doing this, as he does most of his work, quietly, steadily, and effectively, without making a fuss about it, from time immemorial.

Many of the hospitals of this country are in process of extending their scope in order to supply the needs of people of modest means. Contributory schemes are becoming universal, and special hospitals for this class of patient are increasing rapidly. In such a development it is inconceivable that the general practitioner should have no place. Somewhere and somehow you must avail yourself of his services to do the work he is well capable of doing. There are many difficulties but they are, I think, exaggerated and altogether insignificant in comparison to the principle at stake. Leave him out and you will encourage him to find a substitute for your hospital which will not break the personal tie between patient and doctor, or at least tempt him to avoid using your institution as far as possible. Leave him out and in some areas, I am sure, you will run grave risk of dividing the local profession into two parties, to the detriment of both. Leave him out and you will deprive him of a most important means of keeping himself efficient and improving his value as a doctor.

The profession recognises that the hospitals must have all the material they want for teaching purposes; that every case of emergency or difficulty must continue to have free access to their doors; that nothing must ever be done to damage in the least their wonderful record of response to the needs of the sick. But if they make claim for increased support on the grounds of the steady increase of their out-patient work, and ask for sympathy for an overworked specialist staff, they must satisfy the profession at least that they are not encumbering their machinery with unnecessary work. If they spend money and the time of a specialist staff on work that can be just as well done by outside general practitioners, and for which provision has already been made by the State, they deserve as little sympathy in that respect as the general practitioner who takes advantage of their charity to escape his own obligations.

COLLEGIATE LIFE AND CLINICAL STUDIES

By W. R. Halliday, LL.D.

PRINCIPAL OF KING'S COLLEGE, LONDON

I am not going to pronounce upon the vexed question of larger and smaller clinical medical schools, though there seems to a layman a very valid line of argument which the smaller clinical schools can put forward. But I should like to say a word upon the merits and defects of the system by which the pre-clinical years of study are spent at a college, whether in Oxford or Cambridge or London and the clinical years in a hospital.

The supreme educational merit, as it seems to me, of this divided system is that the student—usually young, for the complete medical course is long—does his earlier years in close contact with students of other subjects and other faculties than his own and is not too early completely immersed in a professional milieu. For individuals—for we all know that some of the richest harvest of our university experience was derived not from the class-room but from sharpening our minds on and exchanging ideas with our fellow-students—I believe this contact to be of the very highest possible educational value. For medical science, as it advances, it is becoming more and more important to be at least on nodding terms with sciences not merely contiguous but already forming part of it. I think of the fact that at King's one of our readers in physics has taken a medical degree in his spare time and is now doing important work as consulting physicist to one of the London hospitals, while another of the younger members of the physics staff is leaving us to become a doctor.

The disadvantage in the severance of the scientific (if I may so call it for convenience) and the clinical stage is that some students may not adequately get their connexion into their system. They may learn up their anatomy and physiology, pass the Second M.B., and think they have finished with them. They will only be so foolish if when learning their anatomy and physiology they have regarded them as so much academic stuff to get up in order to answer questions in an examination paper. In King's College we are anxious as far as possible to obviate this danger to the weaker vessels. We are grateful to Mr. Macleod and Dr. Warner, and to those clinicians belonging to the other hospital medical schools with which we are especially associated, who have accepted honorary positions on our staff and so bring into the class-rooms of preparation for the Second M.B. the realisation that the science there learned is to be clinically applied. Equally our College teachers have tried, so far as possible, to help the clinical medical schools with lectures to remind students at a later stage that clinical practice and the successful treatment of particular cases rest upon the fundamental principles of science.

A great many of the most important things in higher education and research are so much a matter of atmosphere and attitude of mind that it is difficult briefly to make their value clear in a few words. I am personally sure that the indirect influence of mixing up medical students with students of other faculties is of the very greatest value. Similarly, I attach the very greatest importance to the coöperation which we are doing our best to promote between the staff of the College and the clinicians in the hospital medical schools. We are fully alive in the College to the danger of academic teaching in the medical sciences becoming divorced from "real life." The free interchange of thought and coöperation in research between clinical and pre-clinical teachers will be promoted in the College by any means in our power, and I am glad to think that our new Hambleden department of anatomy, which was opened last year, will provide on our side the necessary laboratory equipment for doing our full share in carrying this ideal yet further than we have been able to do in the past.

MIND AND BODY

By Douglas McAlpine, F.R.C.P.

PHYSICIAN IN CHARGE OF THE NEUROLOGICAL DEPARTMENT, MIDDLESEX HOSPITAL

Freud's views may be briefly summarised as follows. Everyone has within him certain instinctive feelings. Some of these feelings and wishes are felt to be wrongful or unpleasant—that is to say, they cannot be reconciled with the person's idea of right or wrong, or they may offend his pride. They are therefore relegated to the unconscious by a process of forgetting or (to use the psychological word) repression. If this process is only partially successful it will produce a state of mental discomfort which may in certain individuals lead to the development of a neurosis. According to Freud the neurotic is the person who instead of attempting consciously to find a solution for his problem shoves it aside or represses it. Treatment consists in bringing these conflicts to the surface and persuading the patient to face them. This constitutes psycho-analysis, and credit must be given to Freud as one of its earliest exponents. Unfortunately he overstressed the part played by sex in the ordinary individual's life, and this undoubtedly had a prejudicial effect on the acceptance of psycho-analysis by both the medical profession and the lay public.

Adler, a former pupil of Freud, lays especial stress on the fact that no two people are alike mentally as well as physically, and that it is necessary to study each case separately. The name "individual psychology" has been given to this school which at present has many adherents in this as well as in other countries. Briefly, Adler's teaching holds that a person's character, or as he calls it "style of life," is formed during the first eight years of life and that an adult will react to his difficulties in the same manner as he did in childhood. The normal person faces difficulties in a common-sense way. He depends upon courage or confidence which has been built up by experience in childhood and upon a feeling of secure membership of the human family, a feeling which depends upon the harmony of his own life.

Family life represents on a minor scale what social life will be when the child grows up. The adult neurotic is the product of an abnormal attitude to life adopted in childhood.

Can neuroses be prevented and can they be cured? The answer, I think, to both of these questions is in the affirmative. The past 20 years have created a feeling of insecurity largely attributable to the war and the disappointments of peace. People have been subjected to unusual strain and it is little wonder that many have broken down. Most of us are potential neurotics and therefore we should understand and by encouragement help those who either by their parentage, upbringing, or circumstances, have lagged behind in the race of life. The principal duty of parents towards their children is to teach them at an early age to have courage. Most young children are fearless, they become frightened of situations by the remarks and attitude of their parents. If every anxious parent realised that the child's mental development was of more importance than his physical health and the part which he or she played in the formation of a child's character, there would be far less unhappy and many more useful people in the future. Educational authorities are awakening to the importance of psychological principles in the teaching of children, and that a class of children cannot be taught according to methods of mass-production, but that each member of that class has an individual personality, and that the successful inculcation of self-confidence into each child depends on a teacher's appreciation of this fact.

There ought to be wider facilities for psychological treatment of children and their mothers. As far as I am aware there are at present only two hospitals in London where special clinics of this sort exist.

Treatment may take one of two forms, suggestion and persuasion or some form of psycho-analysis. Suggestion is a method of treatment which has been used by physicians ever since they began to practise the art of medicine. The mere assurance of a doctor that there is nothing seriously wrong and that the patient will lose his symptoms has always a beneficial effect on the neurotic subject. Allied to suggestion is persuasion. This method was used by Dr. Hurst and others during the war. Soldiers suffering from hysterical paralyses were made to walk in a day, sight was restored to the blind, and hearing to the deaf. In other days and times such cures would have been spoken of as miracles. The same methods of suggestion and persuasion applied in civil life are not always so successful. In the war cases the explanation was not difficult to find—namely, the fear of war. In civil life the cause of the symptoms may be obscure and it is necessary to hear the patient's life story and to show him how and where he has failed and the path he must tread in the future. The mention of psycho-analysis to a patient often conjures up in his mind the thought of a painful confession in which the patient is subjected to a severe cross-examination chiefly on sexual topics. I have tried to make it clear that modern psychotherapy is not concerned paramountly with sex, but with the person's life pattern as formed in childhood and his reactions to difficulties later. Such an inquiry requires to be carried out first and foremost by a doctor who feels sympathetically towards the patient. Apart from exceptional cases it requires no advanced technique beyond a working knowledge of psychological principles.

Those of you who are commencing your medical studies will soon be interested in the study of the human body and its reaction to disease. Try from the first to remember that, however interesting the case may be from the organic point of view, the patient has also a mind. When you enter upon practice you may find that most of the interesting conditions you saw in hospital never seem to come your way. Indeed, many of your patients will complain of "nerves" or of symptoms for which you can find no cause. Such a patient is almost certain to be up against some problem which he is evading. You will, I hope, attempt to ascertain the nature of his problem. In the majority of cases you will be able to make the patient know himself and understand how his symptoms have developed. You will encourage him to face his difficulties and sometimes you may have the satisfaction of seeing him recover his health and happiness.

It may be objected that the general practitioner has no time for this sort of thing. Surely it is much better in the long run to spend an hour with a patient on two or three occasions with a chance of doing him some good than to hope that bottles of physic may cure him. You will meet with cases that do not respond to this simple psychological treatment. These you should send to the psychological department of a hospital or a specialist in psychotherapy. But the general practitioner as family physician is best suited to handle early cases of neurosis in adults and children.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 24TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox. 7 (last week 19); scarlet fever, 1613; diphtheria. 908; enteric fever, 94; acute pneumonia (primary or influenzal), 465; puerperal fever, 44; puerperal pyrexia, 103; cerebro-spinal fever, 36; acute poliomyelitis, 33; acute polio-encephalitis, 8; encephalitis lethargica. 11; continued fever, 1 (Winsford, Cheshire); dysentery. 15; ophthalmia neonatorum. 72. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 27th–28th was as follows:—Small-pox. 27 under treatment, 2 under observation (last week 22 in all); scarlet fever, 1303; diphtheria, 1418; enteric fever, 23; measles, 269; whooping-cough, 349; puerperal fever, 24 (plus 10 babies); encephalitis lethargica. 231; poliomyelitis, 5; "other diseases" 147. At St. Margaret's Hospital there were 16 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox. 2 (0) from enteric fever, 4 (0) from measles, 6 (2) from scarlet fever, 15 (2) from whooping-cough. 24 (7) from diphtheria. 68 (16) from diarrhœa and enteritis under two years. and 7 (1) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa are diminishing. the acme having been reached in the week ended *Sept. 10th*. when the number was 89 for the great towns and 29 for London; Liverpool still stands highest with 14 deaths, West Ham following with 3, no other town reporting more than 2. East Ham and Walthamstow each reported 1 death from enteric fever. The fatal cases of diphtheria were widely distributed. 2 each being reported from East Ham, Liverpool, and Salford.

The number of stillbirths notified during the week was 261 (corresponding to a rate of 42 per 1000 total births). including 43 in London.

POST-GRADUATE LECTURES

WE continue this week the publication of abstracts of some of the lectures delivered at the autumn post-graduate courses of the London teaching hospitals. Those summarised below were delivered at St. Mary's (Mr. Leslie Williams and Dr. Reginald Miller), King's (Mr. Yates Bell), and Charing Cross (Mr. Crook).

ANALGESIA AND ANÆSTHESIA IN OBSTETRICS

(MR. LESLIE WILLIAMS)

IN discussing this question we must realise that considerable progress has been made in recent years. No longer is the parturient woman expected to bear the pains of labour as the natural thing; nor is a whiff of chloroform towards the end of the second stage accepted nowadays as a reasonable palliative. In fact, I think we are trying to travel too fast along a difficult path and, though advance and research in the relief of pain in childbirth is admirable in the hands of qualified and skilled practitioners of medicine, personally I deprecate the present tendency towards the widespread exhibition of analgesic drugs and anæsthetics by midwives. For the administration of an anæsthetic always requires skill and experience, and in obstetrics the judgment of dosage is extremely difficult if one is to strike the balance between preservation of uterine contractions and absence of memory of suffering.

Passing to practical methods which can be used by practitioners, I think the most generally useful analgesic for the *first stage of labour* is morphia and scopolamine. I advise morphia gr. ¼ and scopolamine gr. 1/100 as soon as the pains are really beginning to cause distress. This is often found to be at the time when the cervix is completely "taken up" and dilated to about two shillings. Subsequent doses of scopolamine gr. 1/450 can then be given at intervals of one to two hours, and usually the degree of analgesia and amnesia thus obtained is fairly satisfactory. However, the estimation of the quantity of the drug required for any individual patient is very difficult, and, if the method is to be pushed to the fullest, the complete "twilight sleep" technique may be adopted. In this the time for the administration of the repeated scopolamine doses is judged by means of a "memory test" and too much notice must not be taken of the appearance of suffering during a pain if the patient sleeps in the intervals. A few words of warning are, however, necessary. The "twilight sleep" patient must never be left unattended for a single moment. One of the reasons for this is that they become very thirsty, and even if given drinks, they may, if left alone, get out of bed in a semi-conscious condition and drink any antiseptic lotion that may be lying about. Again, the condition of the bladder must be watched very carefully and catheterisation employed when necessary. In some cases violent mental excitement is manifested, and in these, as in others in which overdosage is indicated by an increased pulse-rate and slowing of the respiration, the hyoscine must be stopped immediately. In cases which are responding well the scopolamine injections may be continued for many hours and even throughout the second stage, but it is customary when the head appears at the vulva to discontinue the twilight sleep and to change over to one of the anæsthetics which I shall shortly describe as being of value in the expulsive period.

Among other objections which have been raised against morphine-scopolamine analgesia is that the child is born in a state of apnœa. True; but I feel that all such children will, if suitably treated, recover. The suitable treatment consists essentially in keeping the child still and warm, clearing the air-passages, giving stimulants, the administration of 6 per cent. carbon dioxide in oxygen, and, above all, the avoidance of violent methods of artificial respiration.

Recently the various barbiturate preparations have been extensively employed, and perhaps the most widely used has been Nembutal. With this drug I have had some very satisfactory cases and some very unsatisfactory ones. Some of the best results have been obtained by the following scheme of dosage. Morphia gr. ¼ and scopolamine gr. 1/100 are given when the pains are first causing real distress. This is usually followed by sleep, and on awakening the pains again become regular and strong and are associated with more or less distress. At this point two capsules (grs. 3) of nembutal are given, and are immediately followed by a drink of water as hot as the patient can drink. I think this helps to dissolve the capsule and to assist the absorption of the drug. A third capsule may be given three hours later if the patient is obviously losing the effect of the first dose, and a fourth a further three hours later. Generally speaking I do not think this dosage of four capsules (grs. 6) should be exceeded, and in a fortunate case the labour is nearly terminated and the suffering of the remaining expulsive pains can be relieved by chloroform or gas-and-oxygen.

I have tried the method of giving nembutal and chloral as described by J. V. O'Sullivan and W. W. Craner[1] but have not been very successful, and in my experience it has no advantages over nembutal alone. And I repeat that nembutal is by no means ideal since there is an enormous variation in its effects on various people, and in using it I have a very definite fear of causing poisoning.

Sodium amytal should theoretically be superior to nembutal for obstetrics since its action is less intense but more prolonged. It can be given in approximately double the dose of nembutal and the doses spaced further apart. I have little experience of this drug at present. Avertin might be used, and has, in fact, been extensively tried in obstetrics, though more for the second stage than for the first; but rectal administration of a drug and the subsequent spilling of some with the descent of the head is a disadvantage. Personally I think there is no place in obstetrics for the intravenous administration of nembutal, &c. Apart from the well-known dangers, the action of the drug is much too short-lived to be of use in counteracting the prolonged suffering of childbirth.

Finally, before proceeding to discuss briefly anæsthetics for the second stage of labour, I should like to draw the attention of those who can study the technique in hospitals to the Gwathmey method. In this, morphia has its action intensified and prolonged by being given intramuscularly in 2 c.cm. of 50 per cent. magnesium sulphate solution. Two further injections of the magnesium sulphate solution alone are given during the first stage, and just before the second stage a mixture of ether and olive oil is injected into the rectum.

In the *second stage of labour* the best anæsthetic is gas-and-oxygen. It is given with the onset of each pain, and the patient is allowed to regain consciousness in between. As in everything else, there are disadvantages: the apparatus is heavy and bulky, the services of a skilled anæsthetist are required for a prolonged period of time, and—a point often overlooked—the patient wakes up after each administration and asks pitifully "is it all over yet?" However, with all its disadvantages, it is still the best, and the alternatives of chloroform, usually given from a Junker's apparatus by the nurse under the supervision of the obstetrician, or better, ether or other inhalation anæsthetic administered by an anæsthetist, have the disadvantage that uterine contractions are seriously interfered with unless the minimum useful dosage only is given, and that only during the pains. Furthermore, the child is often born to some degree anæsthetised.

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[1] See THE LANCET, 1932, i., 119, 263, 1175; also July 23rd, p. 182.

For some time past at many hospitals experiments have been made with 20-minim capsules of chloroform, wrapped in several thicknesses of lint which, when broken, allows the parturient woman to inhale the chloroform vapour from the packet; the capsule is held over her mouth either by herself or by a nurse in attendance. This method has been devised in the hope that it will enable midwives to relieve the sufferings of patients in their charge. I hope it will be found to be successful, but having tried the inhalations myself, I am rather afraid that there may be accidents from the inhalation of too concentrated a vapour. However, results will show, and in the cases I have seen the relief of pain seems to have been considerable.

I do not propose to-day to deal with extradural or spinal analgesia in obstetrics, for these are methods useful chiefly in hospital practice.

TREATMENT OF COLI BACILLURIA AND PYELITIS

(Mr. YATES BELL)

I PROPOSE to dismiss the treatment of the acute condition in a few words. The patient must, of course, be confined to bed between blankets and remain in bed until the temperature has been normal for at least seven days. Sweating is to be encouraged by means of hot-water bottles, but diaphoretic drugs are now eyed with disfavour; an initial purge should be given, but excess of purgation after this is to be avoided. In the diet, fluids only are allowed at first and here it must be emphasised that milk is to be excluded absolutely until recovery is complete; as the patient improves the intake may be increased with fruit, vegetables, and carbohydrates, and then with chicken—other meats and milk being disallowed until complete recovery. Alkalis, with belladonna, must be administered until the temperature has been normal for at least two days and, as Frank Kidd pointed out, it is wise for the doctor to visit the patient frequently to test the urine with litmus and increase the dose of citrates, &c., until the urine is well alkaline. When the febrile state is over, a course of urinary antiseptics should be started and this should be continued for three months; the various drugs and their methods of administration I will refer to later.

Chronic *coli* bacilluria I deem to include delayed resolution after a first acute attack and repeated exacerbations (which may of themselves be acute or subacute) of a mild or latent infection. Any pyrexial attack must be treated under the rules given for the acute condition, but when the fever disappears the case should be treated under the following scheme: in chronic *coli* bacilluria I do not include gross disease such as infection complicating enlarged prostate or stone in the bladder; nevertheless, such conditions must first be excluded by careful clinical, cystoscopic, and radiological examinations. Assuming the infection to be so-called primary, it is still important to search for a possible focus. The appendix is often at fault, less commonly the nasal sinuses, tonsils, and teeth; the large bowel may be to blame.

It is my principle to attack these chronic coli bacilluria cases with three groups of treatment which I will call (*A*), (*B*), (*C*).

(*A*) Firstly a combination of *general hygiene, diet,* and *drugs* must be tried. Attend to the large bowel; it is just as important to avoid diarrhœa and fluid motions as it is to avoid constipation. Salol grs. 10 or hydrarg. c. cret. gr. ½ may be given t.d.s. as intestinal antiseptics. Milk and red meats should be avoided; fluids should be taken freely at all times, and lactose (2 oz.) may be given daily to promote the natural growth of *B. acidophilus* in the intestine. Drugs are the same as have been known for some years, but more attention is being paid to the reaction of the urine while such drugs are being administered. The colon bacillus is inhibited by an alkaline urine (neutral pH 7) or by an acid urine when the pH drops below about 5·6. It is therefore important to pay more attention than has been the custom to the reaction of the urine, testing with litmus; the urine must be shown to be very acid or very alkaline, according to the drugs being given in association at that time.

(*a*) Alkalis are the usual potassium citrate, potassium bicarbonate, and sodium bicarbonate. They must be given in doses large enough to render the urine strongly alkaline.

(*b*) *Acid sodium phosphate* is still the most popular acidifier of the urine and it does increase the amount of acid radicles therein but it does not increase the hydrogen-ion concentration sufficiently (depress the pH) in many cases. The dose usually given is grs. 30 t.d.s., but this is often insufficient; as much as grs. 150 may be given t.d.s., the sign of overdose being diarrhœa due to its salt action on the bowel. It should be given before meals, with the antiseptic after meals, for its excretion in the urine is slower. Benzoates and salicylates are similar but much less effective.

(*c*) *Ammonium chloride* grs. 20 t.d.s. in a mixture with the urinary antiseptic is good and will give a lower pH in the urine than can be obtained with acid sodium phosphate.

(*d*) *Ammonium nitrate* 0·5 g. in a keratin-coated capsule is effective. Twelve capsules are given during the day. The urine can be best acidified by this method.

(*e*) *Hexamine* to be given with an acid urine is still the most effective of the urinary antiseptics. It is probably best prescribed in a mixture with ammonium chloride and extr. glycorrhizæ liq.

(*f*) *Cystopurin*, a combination of hexamine and sodium acetate, is less irritant than hexamine, and may be prescribed for those people whose digestions are upset by hexamine.

(*g*) *Hexyl resorcinol* should be given in capsule form increasing the dose to 3 capsules t.d.s.; during its administration fluids should be restricted and no alkalis given, for its action depends largely on surface tension.

(*h*) *Methylene-blue* in a pill of grs. 3 is useful, especially as it may be administered in association with an alkaline prescription.

(*i*) *Mercurochrome*, 4 mg. per kg. of body-weight, is given intravenously; but it is sometimes toxic and not without danger, and in my opinion its advantages do not outweigh the risks.

(*j*) *Neutral acriflavine* gr. ½ t.d.s., as a tablet, is of definite use.

A scheme for administration of these drugs should be on the following lines: An alkaline mixture for a fortnight, then an acid mixture for six weeks, giving hexamine for the first two weeks, hexyl resorcinol for the next two weeks, and acriflavine or cystopurin for the third two weeks. Drugs and hygiene should be continued for two months, and if there is improvement this cycle may be repeated; but if there is no improvement other means must be tried.

Vaccines, in my opinion, are a definitely helpful adjunct and that view I believe is now generally held. It is my custom to give vaccine treatment coincidently with the diet and drug course, but this is not always possible in general practice and where the number of hospital out-patients is very great;

where difficulties arise vaccine should be reserved for cases not responding after two months' drug treatment and then combined with a further course of these urinary antiseptics. The vaccine must be autogenous and the dosage small; it is my rule to begin with half a million, increasing up to five million, and eventually to ten million at intervals of ten days. The urine for vaccine preparation must be obtained through catheters from which any sterilising antiseptic—e.g., biniodide or formalin—has been removed by sterile water or saline; even traces will inhibit the growth of bacteria in culture.

(*B*) *Lavage of the renal pelvis* should be the next line of attack in cases of failure of drugs and vaccine. It is now a definitely established treatment, thanks largely to the work of Frank Kidd. It should be done by an experienced urologist and reserved for chronic cases except in exacerbations of acute pyelitis of pregnancy. The pelvis is washed out with sterile saline through a ureteric catheter and 4 c.cm. of 1 per cent. silver nitrate or 5 per cent. colloid silver is installed into the renal pelvis; the catheter is then withdrawn, allowing the antiseptic fluid to escape gradually. The treatment may be repeated at seven-day intervals and as many as six or ten wash-outs may be given.

(*C*) *Ketogenic diet.*—This is a new and very promising method of treatment. Owing to the nature of the diet it is necessary to carry it out in consultation with a biochemist; this very fact, of course, will cause the treatment to be reserved for cases that have not responded to more convenient methods; but it has given marvellous results when carefully applied. It depends on the replacement of the carbohydrates in the diet by fat until ketones are present in the urine as indicated by the ferric chloride test. It is not quite certain whether there is an antiseptic virtue in the ketones, or whether it is the associated lowering of the pH (increase in acidity); but apparently the best results are obtained when the pH is low and it is customary to combine the diet with the administration of ammonium nitrate in 0·5 g. enteric-coated tablets (12 a day). It is also essential that the patient can physically digest such a fat diet. The patient must be admitted to an institution for three or four days to allow the biochemist to work out the diet appropriate; he is then allowed to go home, but he must keep strictly to the diet for a month, after which a gradual increased leniency is allowed.

Bacteriophage treatment I mention merely for completeness. Very few writers now claim successes, and these are chiefly in acute cases which would probably recover without the bacteriophage. Bacteriophage is probably of little help in chronic cases, and I do not think its value justifies its use.

SOME SCHOOL PROBLEMS IN PRIVATE PRACTICE

(DR. REGINALD MILLER)

CHILDREN of well-to-do parents are at school for some ten or eleven years, and these years cover most important periods of physical and mental development. We cannot therefore, as doctors, afford to neglect the problems that may arise in connexion with school life, even though they are often of only indirect medical interest. We should not regard the school years as a time of unavoidable strain and difficulty for a child; rather should we think of them as an opportunity to benefit the child in every way. Often, as we know, in the case of a delicate town-bred child, the wise choice of the right boarding-school is the one thing that sets the child up in health. It is, then, with the idea that the very best use should be made of a child's school years that I discuss just a few of the difficulties which may lead to incomplete success or even failure.

To take first the choice of a school for an individual child. The preparatory schools for boys and the private and public schools for girls exist in an atmosphere of considerable competition. There is no need for parents to be dissatisfied with the child's school: there are many more to choose from. As a matter of fact, in the best of these schools the standard is extraordinarily high. The great public schools for boys are more outside this commercial competition, but they have their great traditions to sustain them. In choosing a school it must be remembered that every school has its periods of ups and downs. Taken as a whole, day-school is more of a strain on a child than boarding-school. It necessitates often very long hours, keeping up a dual set of interests, and is lacking in the fuller life of the boarding-school. The solitary child should certainly go to boarding-school, and the same may be said of the delicate town child. In this case the right climate should be chosen, and its good effect can hardly be over-estimated. There are many preparatory schools which may be absolutely trusted to attend to the needs of a delicate child, often with most gratifying results.

Secondly, to get the best results of school on a child's health and character, the school and the parents should coöperate, playing into each other's hands for the sake of the child. Unfortunately, this coöperation is in many cases never established. Parents are apt to regard their own child too much as an individual; whereas the head of a school, while desiring to give individual attention to each child, has to set the tone of the school as a whole. Parents should not be jealous of this. If they thought the matter out they would realise that they do not send their child to school to learn merely lessons, but a great many other things, all of which depend on the atmosphere or tone of the school. It is within the atmosphere of sensible discipline that the child gets freedom from being corrected and dragooned, and it is because of this atmosphere, acting insensibly and automatically, that the child learns to choose for itself to behave sensibly, unselfishly, and so on. Parents should be ready to tell the head of a school their difficulties with their own child, and should not be hurt when they are told of the child's faults at school.

Lastly, of more directly medical interest is the question of fatigue brought about by the strain of school life. The effects of this are largely seen in connexion with the nervous system of a child. It may become dull, apparently lazy, and lose its place in the class; or in the case of highly strung children, it becomes restless, emotional, irritable, wildly disobedient, and negative. Some of the causes of such fatigue lie in the child itself, but others come from the school régime. Of the latter may be mentioned too long hours, too much noise and ragging, too much activity before breakfast, and, in the case of older children, possibly too short hours of sleep and insufficient or improper food at night. The strain of examinations, now that all public examinations are to a large extent competitive, is capable of doing children great harm. These effects of fatigue, as has already been said, are largely shown in connexion with the nervous system by alterations in mental capacity, behaviour, and so on; and there is a tendency amongst some of the medical profession to suggest it is the school doctor's part to spot, study, and treat cases of this type. As far as normal children, as opposed to psychopathic children, are concerned, I think this would be a mistake. Left to themselves and rested, these children will right themselves. Too much apparent interest in their failings is harmful, whether this interest is taken by the school-teachers or the doctor. In any case, no school doctor can be in sufficiently close contact with the child to see the early signs and symptoms of over-fatigue, and from the responsibility of being able to spot the tired child and differentiate it from the wilfully lazy or naughty child, school-teachers cannot possibly escape.

ON THE TREATMENT OF RECTAL DISEASE

(MR. ERIC CROOK)

THE *ischiorectal fossa* is a part of the body particularly liable to infection. It is filled with fatty tissue which is continually altering in shape, with the degree of distension of the rectum, and it is not well supplied with blood-vessels. Moreover, it is near to a source of infection; indeed, nearly all infective lesions of the fossa are caused by organisms from the bowel. Very often infection travels by way of a fissure. Suppuration may take place in the fossa without easily detectable physical signs; for the fatty tissue can adapt itself to pressure, the skin over this region is thick, and the subcutaneous tissue is dense, so that many ounces of pus may be present without obvious signs. Early incision, however, is essential to successful treatment and the prevention of fistula formation. Extension of infection leads to necrosis of fat. Cases in which there is brawny swelling and fluctuation are easy to recognise, but in others there may be only tenderness on pressure and no fluctuation. A rise of temperature and leucocytosis, in association with tenderness in the ischiorectal fossa, should suggest suppuration. There may be no signs other than slight asymmetry of the ischiorectal fossæ that can be detected with the patient in the genupectoral position, and the exploratory needle gives valuable information in doubtful cases. The incision should not only be T-shaped, but the two right-angled flaps at the junction of the vertical stroke with cross-bar of the T should be cut away to give free drainage and to allow of granulation from below. Healing is usually rapid. Dry wool is desirable as the first dressing to check bleeding. After a few hours this should be replaced by a fomentation, and later moist dressings are the most comfortable; gauze soaked in hydrarg. perchlor. solution, 1 in 1000, laid upon the surface of the wound is satisfactory. In a doubtful case it is better to incise unnecessarily than to miss the presence of suppuration.

A distinction must be made between internal and external *hæmorrhoids*. Patients often come complaining of "an attack of piles," which often means that a small vein connecting the internal and external hæmorrhoidal plexuses has given way and formed a hæmatoma. This constitutes an external pile. On examination there is a bluish swelling ranging in size from the dimensions of an orange pip to those of a grape. It is tender on pressure, and is preventing the external sphincter from closing properly. An incision should be made under local anæsthesia to shell out the clot. An elliptical snip is made with scissors, and the groove left by removal of the clot usually heals readily. If left, the clot may suppurate or else contract, leaving a pellet of fibrous tissue, an anal tag. In internal hæmorrhoids the attack may be due to phlebitis with or without thrombosis. A large pale œdematous swelling prolapses and appears at the anal margin. It can be treated by local applications, but it is probably better not to defer operation. In the uncomplicated case opinions differ on the value of injection versus operative treatment of internal piles; with injection there is little discomfort, whereas the post-operative period is painful. On the other hand the results of operation are more permanent. Probably injection should be reserved for recent cases where the hæmorrhoids are no more than dilated veins; in old-standing cases there is much fibrous tissue, and injection results in formation of a pad of fibrous tissue which still has a tendency to be forced down through the anal sphincter; for such fibrotic cases operation is necessary. As with ischiorectal abscess, the best post-operative dressing for piles, internal or external, is a moist one. After applying hydrarg. perchlor. dressings for a week a change can be made to ung. hydrarg. subchlor.

Well over half the cases of *cancer of the rectum* coming up for treatment have reached the inoperable stage; the rectum, although highly sensitive in the lower part is relatively insensitive higher up. Although rectal cancer is not a rapidly growing variety it usually reaches an advanced stage without causing pain or discomfort. The scientific treatment is complete excision of the rectum and its lymphatic drainage by the abdomino-perineal method, but the case-mortality is high and the alternative treatment is perineal excision of the rectum following a previous colostomy. Where radical removal is impossible, attention must be given to relieving symptoms and reducing the discharge as much as possible. In those inoperable cases in which colostomy is performed the patient lives longer than in cases where no operation is undertaken. After colostomy the surface of the growth can be kept clean by washouts from below: pain, discharge, and the rate of spread are diminished, and in a few cases an apparently inoperable growth subsequently becomes operable as inflammatory induration round it subsides. In obstruction of the bowel by growth colostomy becomes imperative.

Palpation of the rectum is made easier if the patient lies on the right side and the left index-finger of the examiner is used. Owing to the anatomical relations of the pelvic colon, the examiner can palpate higher up with the patient on the right side rather than the left. In passing a proctoscope or sigmoidoscope the opposite holds good, because with the patient lying on the left side the bowel falls away from the nose of the instrument, which is therefore more easily passed.

HOSPITAL EXTENSIONS.—A new out-patient department has been added to the Victoria Jubilee Infirmary at Tynemouth with a sum of £15,000 bequeathed by the late Mrs. Wilson, of Easby House, North Shields. The building includes massage rooms, a theatre with anæsthetic room, sterilising room, recovery room, and other adjuncts. The warming is by radiation from the roof.—A casualty ward and staff bedrooms have been added to Faversham Cottage Hospital. Hitherto minor operations have usually had to be performed in the wards.—The Murton Street Home of the Sunderland district nursing association has been enlarged by the adaptation of an adjacent house. The work has cost £1300, of which £600 has been derived from the estate of the late Miss Emma Richardson.—Two maternity wards of five beds in all, which have been added to the Nairn Town and County Hospital, were opened last week by the Countess of Leven and Melville. A legacy of £4350 left by the late Mr. Andrew Morison, of Nairn, provided most of the cost, which amounted to about £5000.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Septic Abortion: Coroner's Suspicions

AT an inquest last week upon the death of Eileen Woollard, an unmarried woman, 20 years of age, a verdict of "death from septic abortion" was recorded. The Paddington coroner, as will presently appear, found grave cause for suspecting that an illegal operation had been performed. The names of no fewer than six medical practitioners were mentioned during the inquest, and, while it was clear that the coroner made no reflection upon some of these, it was also clear that he was less than satisfied with the actions of others. The respective parts played by the six practitioners, who may for convenience be referred to as Drs. A, B, C, D, E, and F, are indicated in the following summary of the evidence. The dead girl became ill at Farnborough and stayed in bed for several days, Dr. A visiting her professionally in the evenings. On his advice her mother took her to London to consult Dr. B, who, on Wednesday, Sept. 14th, engaged a room for her at a nursing-home. Dr. B, described as an anæsthetist, was closely questioned by the coroner. He said he was not in general practice. "Why," inquired the coroner, "did a woman like Mrs. Woollard come up from Farnborough to see you, an anæsthetist, about her daughter who was unmarried and having an abortion?" "Because Dr. A sent her," replied Dr. B. "Why did he send her to you?" continued the coroner. The witness answered that Dr. A had to leave England and had no one else in London to whom he could send the patient. To resume the sequence of events, after engaging the room in the nursing home, Dr. B next day (Thursday) administered an anæsthetic and Dr. C operated. Dr. C was examined by the coroner as to his introduction into the case. He explained that Dr. B, in calling him in, said he had himself not yet seen the patient but gathered that it was either an incomplete abortion or a threatened miscarriage. The coroner suggested that there was a discrepancy between this version and what the witness had told the police. On the Friday Dr. B came to the nursing home several times. Dr. C also saw the patient that day, and found her very ill after the operation. Pressed by the coroner as to why he dropped out of the case at this point, Dr. C said he was not available later. Thereupon the coroner expressed his wonder whether perhaps Dr. C's object might not have been to avoid his name appearing on the death certificate. On this same day three fresh practitioners are introduced. Dr. D calls in Dr. E, who finds the patient suffering from septicæmia and peritonitis. Dr. E, in turn, calls in Dr. F. The latter concurring, Drs. E and F perform a further operation early on the Saturday morning, but the girl dies. The death certificate was signed by Dr. E, who was the last to see the patient alive.

Eileen Woollard died on Sept. 17th. On the 20th two women were found dead at Farnborough, in a gas-filled room. One was Eileen Woollard's mother, whom a detective-inspector had lately interviewed. The other was a foreign woman who had carried on business as a lady's hairdresser in Farnborough, and was understood to have studied medicine; there was reason to think that she knew of the dead girl's condition and was aware that she herself would be questioned by the police. The inquest upon these two women, both apparently troubled by financial anxieties, ended in a verdict of "suicide by coal-gas poisoning."

In concluding the Paddington inquest, Mr. Ingleby Oddie is reported to have described the case as a terrible tragedy "all arising out of this conspiracy to get rid of this girl's pregnancy, I am afraid by illegal means." "Everything seems to point," continued the coroner, "to this poor girl being subjected to criminal interference, with the result that she lost her life, her mother lost her life, and the Russian doctor lost her life. I have a pretty definite suspicion in my own mind as to what exactly took place; but, as it cannot be proved by direct evidence, and the circumstantial evidence is not sufficiently strong, the only course I can pursue with propriety is to record a verdict of 'death from septic abortion,' and leave the verdict open." No one will quarrel with Mr. Oddie's general observation: "So long as the law regards criminal abortion as a most serious felony, and regards the person who procures it and in procuring it causes death as being guilty of murder, so long is it the duty of a coroner to endeavour to find who was the person who performed an illegal operation in a case such as this."

PARIS

(FROM OUR OWN CORRESPONDENT)

CONTROL OF THE DANGEROUS LUNATIC

THOUGH the assassin of President Doumer has been beheaded on the assumption that he was responsible for his actions, this singularly tragic murder has focused attention on the problem of the lunatic who is a potential criminal. Psychiatrists, magistrates, and members of the legislative assemblies have conferred together and have decided on the creation of a Société de Prophylaxie Criminelle. It owes its birth to the initiative of Dr. Toulouse, medical director of the Henri Rousselle psychiatric hospital and president of the Ligue Nationale d'Hygiène Mentale, and he has been elected president of the new society. It has appointed nine different committees. The subjects with which they will deal are: (1) Parliamentary action; (2) organisation of criminal prophylaxis; (3) penitentiaries, reports of experts, and criminal psychiatry; (4) penal reform; (5) criminal biotypology; (6) the delinquent child; (7) social factors in crime; (8) sex criminology; and (9) alcoholism and the toxicomanias. At the first meeting Dr. Toulouse pointed out that criminals, who are usually abnormals and psychopaths, are wont to attract the attention of those about them by premonitory symptoms, such as abuse and threats of violence. These symptoms may not warrant the intervention of the law, but in certain cases they ought to be reported to centres of mental prophylaxis or psychiatric services. Appropriate action could then be taken under existing legislative measures. But in order that preventive control can be more effective than heretofore, new legislation, after a thorough psychiatric and juridical study, is necessary. It would seem that Belgium has already taken action on these lines.

THE PUBLIC SWIMMING-BATHS OF PARIS

Certain cases of conjunctivitis, some quite severe, allegedly traced to swimming-baths, have led to their ventilation, metaphorically speaking, in the press. A municipal councillor has requested the prefect of the Seine to answer certain specific questions with regard to the precautions taken to keep the water clean in the swimming-baths. In his reply the prefect has stated that the swimming-baths are fed either by water from artesian wells or by water which has been filtered and subjected to continuous chlorination. The walls of the swimming-baths are cleaned every morning with the help of electric aspirators, and every Monday the baths are emptied and cleaned. Samples of water are regularly taken by the authorities for analysis. The sanitary control of the Parisian swimming-baths thus seems to be satisfactory; and the officials can hardly be expected to catch the individual delinquent who, though he knows he is suffering from some infectious ailment, still insists on diluting his secretions and sharing them with his fellow-bathers.

B C G

B C G inoculation continues to hold the attention of the medical profession in France, where its merits have become, to a certain extent, a question of national honour. Accordingly, evidence throwing light on its value is being continuously collected with great assiduity. The latest report comes from Czechoslovakia, and is quoted by the *Presse Médicale.* After preliminary studies on animals, the State Institute of Hygiene in Czechoslovakia began in 1927 to prepare B C G, a sample of which was controlled in 1931 in Paris by Calmette, who found it to be identical with the Parisian B C G. Up to the end of 1931 a total of 2334 new-born infants had been vaccinated. With every supply of the vaccine sent to tuberculosis dispensaries, lying-in hospitals, and private practitioners, an elaborate questionary was sent. With its help it has been possible to follow the fate of 36·5 per cent. of the vaccinated infants up to the end of 1930. While the mortality among the controlled vaccinated infants was only 3·3 per cent., the general infantile mortality was as high as 14·6 per cent. It is, however, admitted that the vaccinated were as a class better cared for than the non-vaccinated.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE CORK MENTAL HOSPITAL DISPUTE

THE committee of the Cork Mental Hospital at its last meeting passed a resolution which must be almost unprecedented in the history of local authorities. The resolution proposed to fix the initial salary of the newly appointed resident medical superintendent at £450, instead of £750 at which the appointment was advertised. It may be remembered that when a vacancy occurred in the post the committee desired to promote its senior assistant medical officer, a man with long and excellent service in the institution. In order to do this, however, the approval of the Minister for Local Government and Public Health was requisite. The Minister refused such approval, and directed the committee to refer the appointment to the Appointments Commissioners for the recommendation of a candidate. The committee questioned the legality of the Minister's action in the courts of law, but their case failed. The matter was then referred to the Appointments Commissioners, and the salary fixed by the committee at £750 a year, rising by annual increments of £25 a year to a maximum of £900, was approved by the Minister, and the vacancy advertised on those terms. In due time the Appointments Commissioners recommended, and the committee appointed, a candidate other than the officer they had wished to promote. This is the ground recently put forward by the committee, the chairman and two other members dissenting, for altering the salary. Needless to say a contract cannot be broken so easily, and the Minister had already warned the committee that he would not sanction any variation of the salary. Notwithstanding this warning the committee passed the resolution. It is not likely that its action is a deliberate attempt of the committee to drive the new superintendent into resigning, though it is open to this interpretation. It is more likely to be a mere irresponsible expression of irritation at its wishes being over-ruled by the Minister.

MEDICAL DEFENCE UNION

Dr. W. S. A. *Griffith presided at the 44th annual* general meeting of the Union on Sept. 29th, when the report of the Council and the financial statement for 1931 were adopted. It was, he said, the second time he had occupied the chair after an interval of 30 years, during which the membership had increased fourfold. Of additional benefits granted to members in recent years he mentioned the following: (1) An indemnity insurance which provided unlimited cover in respect of damages or costs of the other side. (2) A reciprocal arrangement with the London and Counties Medical Protection Society by which one society will defend a member in an action brought against him as the result of the acts or omissions of an assistant who is a member of the other society. (3) A member of the Union is now defended against the acts or omissions of a bona-fide temporary locum tenens, a subordinate medical officer, or a non-medical assistant or subordinate in his proper sphere of work. (4) When a composite judgment is obtained for fees and costs, the fees due to a member are now regarded as the first claim on any payment received. (5) Any member who has paid 39 subscriptions may now compound for his future annual subscriptions by one payment of £1. (6) A member who employs an assistant not a member of either society may gain protection in actions brought against him by an additional annual subscription of 10s. During the last twelve months the Union, said Dr. Griffith, had defended an unusually large number of actions in the High Court; only in one case was a verdict given against a member. In the numerous allegations of negligence, raised against members in the county courts as a reason for not paying professional accounts, in not one instance was judgment given against a member of the Union. Defence against such allegations depended, he said, upon the evidence that can be placed before the court to rebut the allegation, and the prudent man should always have in mind the possibility of such allegations being made, and should avoid, as a matter of routine, any appearance of carelessness. The frequent employment of X ray and bacteriological examinations would constitute valuable evidence of painstaking and thoroughness. He stressed the imperative necessity of communicating without delay with the general secretary of the Union in all cases where complaints were made against a member. Many cases, he said, are prejudiced by unwise action taken before consulting him.

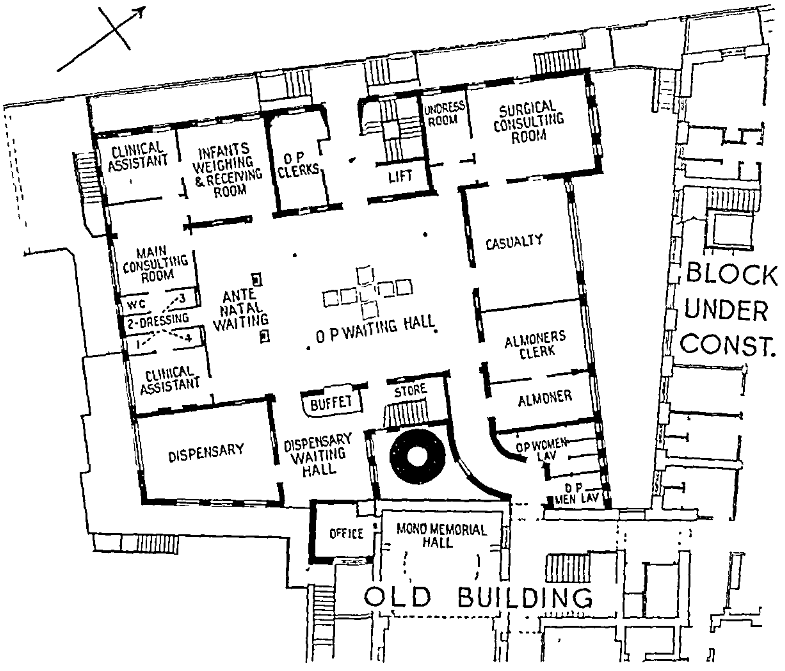
Sir Hamilton Ballance, Mr. F. C. Larkin, and Dr. E. Lewis Lilley, the retiring members of Council, were re-elected.

ST. LUKE'S MUNICIPAL HOSPITAL, BRADFORD.—In the operating theatre of this hospital white has been changed for green. The walls and windows are painted green, and the surgeons and nurses also wear that colour, on the ground that white strains the eyes and has a fatiguing effect.

AN OUT-PATIENT DEPARTMENT FOR CHILDREN

ADDITIONS TO THE INFANTS HOSPITAL

On Oct. 31st the new out-patient department of the Infants Hospital, Vincent-square, London, will be opened by the Princess Royal, president of the hospital. The department is the first part of the extension scheme to be completed; the scheme provides, in addition, for a new ward block for 76 patients, the reconstruction of the existing hospital, and the conversion of the old out-patient department into a new nurses' home. It was originally intended that the new out-patient department should make provision for ante-natal care of mothers, but owing to the economic depression, plans had to be curtailed. Apart from this omission the department has been equipped to meet the needs of the hospital, and the architect, Mr. C. Stanley Peach, has shown consideration for patients, doctors, and nurses alike in his design.



Ground-floor plan of the new block at the Infants Hospital, showing its relation to the old building and to the block still under construction.

The patient's point of view.—Mothers arriving at the department can park perambulators, with reasonable safety, in an alley-way between the new building and a neighbouring row of houses. They enter on the ground-floor level, and wait in the out-patients' hall which occupies the centre of the building and is lighted from above by a glass roof. The hall is rubber-floored and automatically heated. At one corner the dispensary waiting-room opens out of it, and here a buffet is provided at which mothers can fortify themselves with tea and buns. Doors from the hall lead into consulting-rooms, the weighing-room and the almoner's office. A gallery runs round the hall at the level of the first floor, and from this open ear, nose and throat, and eye departments, X ray and massage rooms, a room for light treatment, another for plastering, and a fully equipped theatre in which minor operations can be performed, and next to which a large recovery room has been set apart. Patients therefore need make no excursions to distant parts of the hospital when examination in a special department is required. In the basement, entered by a separate door, is a small blue-tiled chapel and a waiting-room for relatives.

The medical staff's point of view.—Each consulting-room is supplied with an X ray view-box lighted from behind and a basin with running water; heating is by the ceiling panel system, and gas fires are built into the wall for use in emergency. The ground floor consulting-rooms receive zenith light from skylights made by setting the first storey back a little from the ground floor. In the operating theatre the same method of lighting has been followed; air entering the theatre is filtered through cheese-cloth stretched on wire frames which can easily be taken out and cleaned. On the top floor, at roof level, is a diet kitchen and milk laboratory, entirely cut off from the part of the building used by patients. Milk will be stored in a large refrigerated cupboard. The basement contains a series of cubicles in which children found to have infectious diseases can wait until the ambulance comes for them. Behind the chapel is a mortuary and a pathological laboratory where post-mortem examinations can be carried out. Bodies will be placed in a refrigerated chamber.

The nurses' point of view.—An attempt has been made to avoid all unnecessary cleaning and polishing. The rubber or teak-block floors can be cleaned quickly with a mop; the door-handles are made of some sort of composition which actually defies cleaning. Even the stairs are slightly undercut to prevent dust collecting on their faces. A slight falling-off in this admirable principle may be observed in the brass hand-rail, but it is believed that constant use at the hands of the public will help to keep this burnished. Wire glass takes the place of railings on the stairs and round the central well. A special sloping slab is provided for the washing of napkins, and specimen napkins will be kept in small cupboards communicating by means of wire gauze with the outer air. The slats in the linen cupboards can be taken out and boiled; large heated cupboards are provided to warm blankets. All the doors are fitted with self-closing hinges and the walls are covered with cellulose paint.

General equipment.—The windows are made on a special design: the top and bottom panes are hinged along their upper and lower borders respectively, and open inwards to an angle of 45°. The central pane is divided into two lattices with vertical hinges. It is therefore possible to maintain ventilation by opening the top and bottom panes while avoiding any chance of being overlooked by closing the two central panes. A series of emergency batteries are being continuously charged and will come into action in case of failure of electric light power from the main. The equipment also includes water-softening, refrigerating, and ice-making apparatus. The new block communicates with the hospital on every floor, the passages entering the hospital between floors so that none of them are exactly on a level with the wards.

CORRESPONDENCE

SAFE MILK

To the Editor of THE LANCET

SIR,—In your issue of Sept. 24th (p. 707) Dr. Esther Carling raises the question as to what sort of milk the medical profession should recommend. The matter is of supreme importance, for the public is largely guided by the advice of its doctors, and yet few members of the medical profession seem to know the difference between the various designated milks. Your correspondent, after quoting certain figures—admittedly very disconcerting—showing the contamination of milk with tubercle bacilli, comes to the following conclusions: (*a*) there is no absolute safety anywhere; (*b*) ordinary mixed milk comes out better than Grade A; and (*c*) the more expensive type—Grade A (T.T.)—appears as rather less safe than pasteurised.

To the first conclusion I would reply that this is true of almost every foodstuff we consume, and does not apply only to milk. To the second, based on figures quoted from the investigations of Dr. Roodhouse Gloyne, I would remark that there is ample evidence to show that under proper control Grade A milk can be produced reasonably safe, and it seems possible that Dr. Gloyne's figures were based on too small a number of samples to be fully representative. The third assertion calls for comment. Dr. Gloyne is stated to have said that 3·8 per cent. of samples of Grade A (T.T.) milk were contaminated with tubercle bacilli, and the medical officer of health for Lewes questions whether such milk is free from risk for school-children. Now the chief medical officer of the Ministry of Health in his annual report for 1931 informs us that there were 195 Certified and 246 Grade A (T.T.) farms licensed that year. This gives a total of 441 farms where the cows are guaranteed to be free from tuberculosis. The number of samples of milk produced from these farms found to contain tubercle bacilli during the year was eight. As milk from each farm must have been examined many times during the period, the percentage of samples infected must thus have been much below the figure quoted. That even eight samples were found to be tuberculous is greatly to be deplored, and would appear to cast a reflection on the veterinary profession, which is responsible for testing the cows. In three of these cases cows known to have reacted to the test were kept on in the herd after they should have been rejected, and the contamination was thus due to breaches of the regulations and not to faulty testing; and yet in another case the licencee was purchasing ordinary milk from outside, contrary to the terms of his licence.

Under the regulations as they exist to-day a licence may be, and often is, given to a herd indicating its freedom from tuberculosis as the result of a single tuberculin test, provided always that any reacting cows have been removed from the herd. In already licensed herds new animals may be added after having passed one test only, even when they do not come from a tubercle-free herd. It is well known that cattle in the early incubative stages of the disease may fail to react to the test, and it is always possible that such animals may become infective before the next general prescribed test of the herd is carried out; and yet the veterinary surgeon who tests has no power to prevent the inclusion of such animals in the herd. Another danger which is frequently responsible for tuberculous cattle being found in so-called free herds is that there is no compulsory standardisation of tuberculin, and any brand may be used. The chief medical officer in his report above quoted makes the following statement:

> "No less than 16 different brands of tuberculin have been used in tests carried out under the regulations laid down by the Milk (Special Designations) Order, and about many of these no information is available as to their potency or reliability."

The veterinary profession has long been agitating for compulsory standardisation of tuberculin and that it should be made illegal to use any tuberculin not certified to be so standardised. It has approached the Government on more than one occasion to bring in legislation for this purpose, but so far without success.

Other alterations of the Order, which, in the opinion of our profession, would give a greater security against accidental infections, are also called for. It is felt by many, including medical officers of health, that if more use were made of the veterinary profession in the control of the milk-supply, and if a regular veterinary inspection of all milk-producing cows were made obligatory, the incidence of tuberculosis in milk would be materially lessened. This has been proved over and over again in the boroughs and the few county districts where veterinary staffs are so employed. The final goal must, however, be the eradication of bovine tuberculosis from our herds, and a scheme for attempting this colossal task has already been drawn up by the National Veterinary Medical Association of Great Britain and Ireland.

I am, Sir, yours faithfully,

D. S. RABAGLIATI,
Chief Veterinary Officer, West Riding of
Yorkshire County Council.
Oct. 3rd, 1932.

To the Editor of THE LANCET

SIR,—Referring to the menace of the transference of bovine tuberculosis by cow's milk to humans, Dr. Carling states that "it would appear that there is no absolute safety anywhere." While this reference is true in relation to liquid milk, may I point out that a degree of protection, which for all practical purposes may be regarded as absolute, is obtained by the use of milk powder prepared by the improved Just-Hatmaker roller process. When this process is carried out under scientific supervision and control, the bacterial count per cubic centimetre is very low, usually under a maximum of 150, and the remaining flora are of no pathogenic significance. This protection against bovine tuberculosis is achieved without deterioration of vital properties, the loss of vitamin value, if any, being negligible, and this conclusion, drawn from biochemical feeding experiments on animals,[*] is generally confirmed by the experience of medical officers of health and pædiatricians in charge of infant welfare centres and the infant departments of hospitals.

As to the query raised about the safety of Grade A (T.T.) Milk for school-children, it is interesting to note that in recent years roller milk powder, flavoured with chocolate and sweetened with sugar is being used in hundreds of schools as the morning milk ration. This form of chocolate milk not only gives protection against infection, but is much cheaper than Grade A (T.T.) liquid milk, and is in a form to be conveniently served hot to the children during the winter season. In this relation also reconstituted roller milk powder has the advantage of giving a pin-head flocculent rennin curd in contradistinction to the solid curd of liquid milk, a property of great physiological importance in relation to mid-morning peptic digestion.

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[*] References: (1) Hess and Unger: Jour. of Biochemistry, 1919, xxxviii., 293. (2) Carleton Ellis and Annie Macleod: Vital Factors of Food, Vitamins, and Nutrition. New York, 1922. (3) Evans and Burr: Californian Univ. Memo., viii., p. 176. (4) Sherman and Smith: The Vitamins, 1931.

If properly prepared milk powders were universally adopted in lieu of liquid milk for infant and child dietary, the danger of milk-borne disease would be practically eliminated.

I am, Sir, yours faithfully,

Dulwich, Oct. 3rd, 1932. JOHN CAMPBELL, Ph.D.

ACUTE RETROPHARYNGEAL ABSCESS

To the Editor of THE LANCET

SIR,—Amongst the cases of acute pharyngeal abscess recorded in your last issue by Mr. N. Asherson is one in which the mistaken diagnosis of diphtheria was made. From an experience of 36 years' residence in fever hospitals I should say that this error is not uncommon. It is one which has long been recognised. The only clinical lecture I heard Dr. Hilton Fagge deliver—unfortunately he was soon afterwards laid aside by illness from hospital work—nearly fifty years ago, was on "croup," and I remember that he warned us that a post-pharyngeal abscess might give rise to symptoms of laryngeal obstruction and so be mistaken for diphtheria; (see also Fagge's "Principles and Practice of Medicine," 1st ed., 1886, i., 801). In these cases, as was found in Mr. Asherson's sixth case, the abscess is usually situated rather low down, but it can often be detected by digital exploration, a procedure which should never be neglected in cases of "croup" in which there is no exudate on the fauces or Koplik's spots in the mouth.

I am, Sir, yours faithfully,

Hampstead, Oct. 2nd, 1932. E. W. GOODALL.

To the Editor of THE LANCET

SIR,—Referring to Mr. N. Asherson's most interesting article in your last issue, may I recall an article which I published in your columns [1] 30 years ago containing an account of 17 cases. One of these patients was 3 years old, two were 2 years old, the rest were under 2. I think this age-incidence should be emphasised. The prognosis of the complaint is bad chiefly because its diagnosis is missed. Most of these patients do not have the good fortune to come into the hands of a laryngologist. In any case examination by laryngoscope is no easy matter in an infant and usually if the possibility of this complaint is appreciated in infants, and its symptomatology is recognised, laryngoscopic examination is not necessary for its diagnosis. As Mr. Asherson has pointed out, the disease may simulate laryngeal diphtheria. This possibility should have greater emphasis laid upon it. I hesitate nowadays to give an opinion as to the best route for opening the abscess, but seven infants on whom I operated through an external incision in the neck behind the posterior edge of the sternomastoid did well. This constituted all except one of the patients I treated personally. The one patient of my own series who died had Klebs-Löffler infection and acute broncho-pneumonia. The retropharyngeal swelling was a mere complication of these other conditions. From recollection I should say I did not find the operation difficult. There is this further point: that in infancy the most dangerous complication always to be feared is broncho-pneumonia.

I am, Sir, yours faithfully,

Mundesley, Oct. 3rd, 1932. S. VERE PEARSON.

PATHOGENESIS OF CAVITIES IN THE LUNGS

To the Editor of THE LANCET

SIR,—Most physicians and radiologists who have studied the subject now agree that annular shadows represent air-spaces in the lung, but I doubt whether they would agree with Dr. Macfie and Dr. Alexander that tubercle bacilli are always found in the sputum in such cases, or that annular shadows are always accompanied by shadows representing extensive tuberculosis in the lung. If extensive disease is present one cannot assume that the bacilli are derived from the structure represented by the annular shadow. Clinical and radiological observations suggest that there are two types of pulmonary cavities, one the well known, more or less chronic ulcerated cavity, usually loculated, the other a more or less recent spherical space represented by the typical annular shadow. In addition there may be intermediate forms. It seems to me probable that the second type consists of cavities opening out from a constricted bronchiole, or perhaps from one in which a valve has formed, and that these cavities are often distended by air under pressure.

Dr. Mitchell's theory that air passes through a perforation in a bronchus and forms an air-cyst in the interstitial tissues is a most ingenious one, and it accounts for most of the facts, but I would have expected the cyst to be mushroom-shaped or multiple rather than spherical and single. Dr. Morland's explanation of the way in which a high pressure could be produced in a cavity is, I think, reasonable, provided that the existence of a valve is granted. But one must be careful in arguing that the pressure produced during coughing can distend cavities, for that pressure, caused by contraction of the thorax, is exerted also on the surrounding lung tissue. I would suggest that the pressure exerted by the *other side of the chest* should be taken into consideration. The pressure on the sound side during coughing might well be higher than that on the affected side. Such an excess of pressure would be transmitted to the air in the bronchi of the affected side sooner than to the air-spaces (alveoli, &c.), and therefore might distend a commencing cavity. Repeated distensions, however small, would thus produce in the end a definite cavity even when no valve was present.

Personally I believe that the higher pressure produced by the opposite side of the thorax is the only reasonable explanation so far suggested which will account for certain puzzling phenomena such as the protrusion of the lung through a wound in the chest wall, and the occurrence of a high pressure in the (valvular) spontaneous pneumothorax.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 1st, 1932. G. T. HEBERT.

To the Editor of THE LANCET

SIR,—In Dr. Sowerbutts's interesting case report the hypothesis is repeated that these shadows are due to air-cysts in the lung, but surely the evidence in support is not convincing. For (1) air escaping to the interstitial lung tissue would spread along the planes of least resistance, as does surgical emphysema. (2) Surgical emphysema of the lungs may be discovered at autopsy, and these air-cysts are not. (3) Large emphysematous bullæ are also readily detected at autopsy; even if collapsed the wall remains. (4) These annular shadows without any signs of cavity formation may persist for years with slight alterations and it is inconceivable that an air-cyst would so persist. From the moment of formation it would commence to absorb. (5) Under artificial pneumothorax treatment these shadows appear to form areas which do not readily collapse, indicating that at that point the pleura is adherent.

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[1] THE LANCET, 1901, ii., 1117.

It would be idle to deny the possibility of more than one cause for such a radiographic appearance, but to me a pleural origin seems most in accord with he observed facts.—I am, Sir, yours faithfully,

Paignton, Oct. 4th, 1932.   ERNEST WARD.

RESPIRATORY EFFICIENCY TEST

To the Editor of THE LANCET

SIR,—The considerable interest aroused by the ecent observations of Dr. R. A. Young on the need or the measurement of respiratory efficiency and by he report of Dr. Alan Moncrieff who, in your issue of Sept. 24th, describes the results of a series of such tests on "the hospital population," requires, in view of this interest, a more strictly accurate representation of the views of Flack than has been given and generally assumed in Dr. Moncrieff's account. Flack, in the Milroy Lectures referred to, did not intend that the standards of efficiency as adopted by the Royal Air Force should be applied to the general civilian community. Instead, from a series of researches which included the study of a group of pilots who were stressed, unfit, and suffering from "breakdown in the bodily system" from various causes, he merely observed that "a similar condition of bodily inefficiency may be found among individuals who are deemed more or less normal members of the community." Surely this is not, as Dr. Moncrieff suggests, an "unjustifiable generalisation." The fact that evidence of similar inefficiency is discovered among the more or less normal patients attending Middlesex Hospital should come not as a surprise in terms of Air Force standards, but as a clear proof of Flack's contention.

Nevertheless, to those who have been long conversant with the work of Flack and more particularly concerned with the application of his tests, the report of Dr. Moncrieff's investigation has a refreshing appeal; but it must be remembered that these tests are too subjective in nature to give comparable results unless conducted under strictly standard conditions. Apart from a discussion of relative unfitness, one might offer this suggestion, that by retaining the principles, and by a modification of methods, Dr. Moncrieff might still find in these tests a solution to the clinical problems he had in view.   I am, Sir, yours faithfully,

H. W. CORNER, M.D.

Wimpole-street, W., Oct. 1st, 1932.

To the Editor of THE LANCET

SIR,—Dr. Moncrieff conveys the impression that the expiratory force and 40 mm. Hg tests are the main, if not the only, methods employed by the Royal Air Force to estimate respiratory efficiency. This is far from being the case. The vital capacity, calculated from height, weight, and chest measurements, and the breath-holding test, are at least of equal, if not greater, value as a gauge of respiratory efficiency than the test he quotes. Of the four tests connected with the estimation of respiratory efficiency, the expiratory force is probably of the least value, while the 40 mm. test is of more value in demonstrating the coördination between the cardiovascular and respiratory systems under stress than it has as a purely respiratory test.

It is unreasonable to expect that good results could be obtained from any efficiency tests without wholehearted coöperation of the subject concerned, especially in those requiring concentrated maximal effort to perform. For this reason I agree that the results obtained from out-patients cannot be satisfactorily compared with those obtained from Royal Air Force personnel. The essential purpose of the Royal Air Force efficiency tests is not directed so much towards gauging disordered function as towards the estimation of the relative degrees of efficiency among normal, healthy young adults. The average age of Dr. Moncrieff's cases was about 40—the limits being 17 to 70. Respiratory efficiency tests in general, such as those mentioned, are not applicable to elderly persons. The vital capacity may be quoted as a case in point. Calculated vital capacity from height, weight, and chest measurement as laid down in Air Publication 130, can only be applied up to the age of about 30, as increased weight and chest measurement occurring with increasing years would require a higher standard of vital capacity in an individual at 50 than at 20—which is absurd.

The tests employed by Dr. Moncrieff have never been considered applicable to severe cases of disordered respiratory function and might be dangerous if applied in this connexion; it is probable that in such cases a careful clinical examination in experienced hands is likely to prove of greater value than any of the existing tests of respiratory efficiency.

I am, Sir, yours faithfully,

H. A. TREADGOLD,
Consultant in Medicine, R.A.F.

Central Medical Establishment, Royal Air Force,
Clement's Inn, W.C., Oct. 3rd, 1932.

GASTRIC ACIDITY

To the Editor of THE LANCET

SIR,—In a series of articles on gastric acidity this year you have repeatedly drawn attention to recent investigations showing an intimate relation between the acid-base balance in the blood and the secretion of acid in the gastric juice; but you appear to be using these observations to support some new conception of gastric pathology. I admit I do not know what this new doctrine is; I do not always understand what you mean by "gastric acidity," and at times I am left with a haunting doubt as to whether you are clearly distinguishing between gastric juice and gastric contents; in one place in your first article (THE LANCET, 1932, i., 29) by a slip of the pen you definitely write gastric juice when you mean gastric contents. In the last article (August 13th, p. 352), however, you clearly invite us to believe that the acidity of the gastric contents is of little, if any, importance in the production of gastric symptoms. I cannot myself accept this invitation, but what puzzles me is where you find any connexion between these remarks in the opening paragraph and the very interesting experiments of Browne and Vineberg, which you discuss in the rest of your article. These experiments are entirely concerned with the control of the gastric secretion by alterations in the acid-base balance in the blood; but variations in gastric secretion have nothing whatever to do with the quite distinct problem of the effects produced in the stomach by variations in the acidity of the gastric contents. Although this point is really very obvious, it is frequently missed by those who write on gastric pathology. I do agree with your conclusion that we need a wide outlook, but I do not get on very fast if, keeping my eyes on the horizon, I stumble over the obstacles that lie at my feet. Will you help me by going back to that matter of the production of gastric symptoms with which you started, and explain how changes in the acid-base balance in the blood can play any part therein, if by hypothesis we deny any importance to changes in gastric acidity ?

If, indeed, in the treatment of peptic ulcer, oral administration of alkalis should have to be replaced by intravenous or subcutaneous injections, a prospect that you seem to regard rather light-heartedly, it will surely and rightly be hailed by the surgeons as *the last nail in the coffin of the medical treatment of* that condition.—I am, Sir, yours faithfully,

G. W. GOODHART.

Group Laboratory, Archway Hospital, N., Sept. 24th, 1932.

*** Our object in drawing attention to experimental work on the acid-base balance in the blood and the secretion of hydrochloric acid into the stomach was to point out that the secretion of HCl did not depend solely upon local changes in the stomach itself. It was not suggested that variations in acidity brought about by changes in the blood led to "gastric symptoms"; the intention was rather to indicate that the degree of acidity alone does not fully explain the symptoms of indigestion. Extremes are compatible with perfect health, and the investigations quoted do not suggest that symptoms are produced by changes in the plasma bicarbonate. It was not suggested that oral administration of alkalis in the treatment of peptic ulcer should be replaced by intravenous injections, and Balint's interesting observations were cited merely to show that the exact significance of gastric acidity in this disease is as yet far from fully understood and that experimental work bearing on it should not pass unnoticed. It is known for instance that, in cases of ulcer, gastric acidity may be higher after *alkali treatment* and cessation of symptoms than it was when symptoms were present, also that a high or low acidity may be found during the active stage without relation to the severity of the symptoms. —ED. L.

ERRATUM.—Dr. V. Rendall writes: "In a paper on Diathermy and Constipation, published in THE LANCET on August 6th last, an unlucky misprint occurs. In the comment on Case 5 the first six lines were a quotation from the findings at the New Lodge Clinic, while the last five lines were my observations. The quotation marks should have been placed, of course, at the end of the first six lines, and not at the end of the paragraph, and I regret the oversight which Dr. Hurst properly resents."

PUBLIC HEALTH SERVICES

Suggested Economies at Plymouth

THE Plymouth City Council recently appointed a special committee of inquiry into public health administration, and this committee has now issued a report recommending measures which will save more than £6000 a year. Plymouth employs 547 persons in its public health service, and the committee considers that several institutions are overstaffed. It suggests that one of the total staff to 1·6 patients is adequate in the Swilly Hospital for infectious disease, where the matron has a waiting-list of nurses who could be called upon in an epidemic. At Lee Mill small-pox hospital, at present quite unoccupied, there seems no reason to supply the caretaker and his wife with an assistant who is paid £120 a year. A consignment of beds and bedding for this institution is lying there unpacked, and the committee advises that it be taken into use elsewhere. At the City Hospital the staff ratio is 1 to 2·1 patients. For 456 patients in 17 wards the committee found 4 medical officers, 8 consultants, 134 nurses, a dispenser, a radiographer, a masseuse, and 103 others, and considers this excessive; the medical superintendent, however, declared that the place was under- rather than overstaffed. The average cost per patient per week was £2 5s. 5½d.; in the absence of figures from other institutions for comparison, the committee made no recommendation, but pointed out that at this hospital about 100 beds were usually vacant, while at the South Devon and East Cornwall (voluntary) Hospital there is a waiting-list of over 200; this led them to the view that more coördination between the voluntary and municipal undertakings, and avoidance of unnecessary duplication of plant and appliances were required. £600 a year could, it was held, be saved by appointing junior medical officers annually instead of permanent medical officers at £350 a year. The committee also advised the reinstitution of the pay-bed system, patients in these beds being attended by their private practitioners.

Considerable economy has already been effected by using ordinary raw milk for cooking purposes. Hitherto Grade A (T.T.) has been used at Didworthy Sanatorium, Swilly, and the City Hospital. At the City Hospital the saving effected by the change was £650, and at Swilly £156 per annum. The average weekly maintenance cost at Didworthy, 52s. 2·8d., is 9s. 5d. per week per patient above the average for such institutions. Here, again, reduction in staff is recommended—to a total staff of 25—and also reduction in the emoluments of some of the staff, a total economy of £1500 being held to be possible. The committee also strongly recommended that the new Mount Gold orthopædic hospital should only be staffed and equipped for one-half of its capacity, since not more than 50 patients belonging to the city were suitable for admission.

A saving of £1627 is suggested on the maternity and child welfare service, as the committee came to the conclusion that there was considerable overlapping with the voluntary organisations. It recommends the dismissal of one medical officer, four health visitors, one assistant investigation officer, and one clerk, and the abandonment of a proposed sixth centre. Since 1925 the staff has been increased by two medical officers, three health visitors, and a clerk, and the annual cost has risen from £5225 to £13,349. There are 18 sanitary inspectors, and the committee recommends that the number be reduced to 15, a saving of £1050 per annum, by letting vacancies remain unfilled when they occur. The town hall staff of ten should also, it thinks, be reviewed.

The committee emphasises the fact that its investigations have been by no means exhaustive and could profitably be continued. Its report is signed by four of the five members, and the fifth presents a minority report suggesting that the economies proposed are apparent rather than real, and will only shift the expense from one department to another. He disagrees with practically all the specific proposals made.

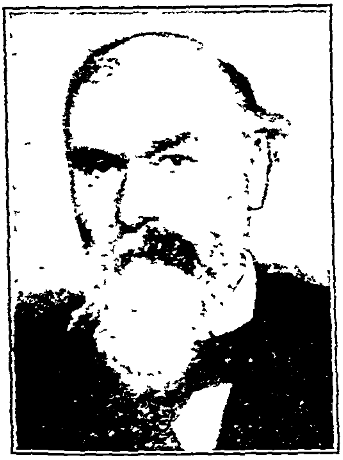
When the report was submitted to the Plymouth City Council the Labour members protested, and expressed unwillingness to accept any reductions in expenditure on public health. After prolonged discussion, both reports were referred to the Public Health and Maternity and Child Welfare Committees.

OBITUARY

WILLIAM STIRLING, M.D., D.Sc. Edin., LL.D. Glasg.

Prof. Stirling's death on Oct. 1st at his home in ictoria Park. Manchester, ends a long life of rodigious activity in the service of medicine.

William Stirling was the son of Francis Stirling nd Isabella Crawford, of Grangemouth, Stirlingshire, here he was born in January, 1851, and naturally e was educated at the Dollar Academy, going on o Edinburgh University where he graduated in cience in 1870 and in medicine in 1875, each time ith first-class honours. He took all the scholarhips and prizes for which he was eligible, and at he same time made mental notes of the habits and peculiarities of his teachers, a faculty which revealed his bent as a student of men. Among the teachers under whose influence he came, as he himself has told us, was J. H. Balfour, the dryness of whose teaching earned him the world-wide synonym of "woody fibre"; G. J. Allman, a congenial Irishman, whose knowledge and appreciation of invertebrate fauna led him to tell of the amœba "with its sad and doleful cry" and its ill-equipped digestive arrangements; Lyon Playfair, a pupil and friend of Liebig, who with the help of James Dewar introduced the student to the chemistry of foods and dietaries; William Turner, bold, decisive, precise, and superbly audible as a lecturer and a prince of demonstrators; J. Hughes Bennett, like a modern Justinian, laying down the law in his institutes of medicine, and furious with Virchow who had dared to substitute leukæmia for his own term leucocythæmia; James Spence, an excellent operator and careful surgeon but not an inspiring speaker, whose dissections of the injected blood-vessels of the foot still bear witness to his manipulative skill; Robert Christison, whose course of 100 lectures carried his hearers from Tinevelly senna to inunction of the thyroid by a mercurial salve, and his own imminent death from swallowing calabar bean averted only by the immediate swallowing of his shaving-water; Douglas Maclagan, the bard of the medical faculty, who combined medical jurisprudence and the teaching of public health; W. R. Sanders, whose teaching of pathology was largely pathological anatomy, Paget at home and Rokitansky in Vienna being names to conjure with; the erudite Thomas Laycock, who gave daily disquisitions on "omitted chapters" in medicine with a style all his own. J. Y. Simpson had already reached his zenith and was stricken with angina pectoris; his nephew, Alexander, who followed him, treating his subject balanced by the physiology and pathology of the modern German school. On the clinical side Bennett, with his didactic and precise method of examining patients at the bedside whatever the alleged diagnosis; "where do you feel pain?" was the first and invariable question, and woe to the student who omitted it. James Syme, of wonderful dexterity, whose lessons taught so pithily and forcibly by demonstrations were never forgotten; and finally, Joseph Lister, transferred from Glasgow to succeed his father-in-law, who applied modern physiology and pathology to the infant bacteriology, and who demonstrated to astonished fourth-year students the blood clot lying in a compound fracture without becoming septic.



PROF. STIRLING

These were Stirling's teachers at Edinburgh, and we draw on his own reminiscences to describe them. Later he went to work with Karl Ludwig at Leipzig and Ranvier in Paris, returning to demonstrate for W. Rutherford at Edinburgh until in 1877 he was appointed to the chair of the institutes of medicine at Aberdeen. Nine years later, on the retirement of Arthur Gamgee, he was called to Owens College, Manchester, as Brackenbury professor of physiology and histology, and for 33 years he represented physiology at the College and the University. It was largely owing to his energy that the great block of laboratories arose as an annex to the medical school. As dean of the faculty of medicine from 1902–13, his administrative ability found full scope. So successful was he as organiser and teacher that it is rather in these capacities than for original work that Stirling will be remembered. He possessed a commanding figure and personality which impressed his students, both at lectures and in the laboratory, and he knew their needs. Before his transference to Manchester he had translated Leonhard Landois's text-book of human physiology, with so many emendations and additions that it became in his hands largely a new work. The book was unique in its attention to the practical bearings of physiology on medicine and surgery, making it possible for the student on entering the wards of the hospital to understand disease as a modification and perversion of normal processes. This result was actually achieved by Stirling in the early years of his professorship, and a large share of the success of the medical school of that epoch may be rightly allotted to Stirling's groundwork, none the less effective in that his teaching was frank at times almost to the degree of coarseness. A few years after reaching Manchester he brought out two smaller manuals, one on practical histology, the other covering chemical and experimental physiology, which became the guides of students in many medical schools. Stirling was happy in his publisher, Charles Griffin and Co., who were lavish in allotment of space and illustrations. His other important writing was a later study, entitled "Some Apostles of Physiology," in which he set out their contributions to the advancement of the healing art as well as to the prevention of disease. His knowledge of his colleagues was world-wide, for he visited every international physiological congress and had first-hand knowledge of nearly all the continental schools. Stirling retired from the chair of physiology in 1919, but continued to make use of his vast store of information in papers of historical character and other ways.

So completely indeed had he retired that few of the present generation of students knew him. One of his old students writes: "While Stirling did not perhaps go as far in research as was expected of him, he did much in coördinating our knowledge and going back to that matter of the production of gastric symptoms with which you started, and explain how changes in the acid-base balance in the blood can play any part therein, if by hypothesis we deny any importance to changes in gastric acidity?

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When the report was submitted to the Plymouth City Council the Labour members protested, and expressed unwillingness to accept any reductions in expenditure on public health. After prolonged discussion, both reports were referred to the Public Health and Maternity and Child Welfare Committees.

envelopes. In most instances the difficulty has arisen in dealing with the records of a practice in which one practitioner has succeeded another, or a change has been made in the partners of a firm. It is obviously desirable that the regional medical staff should be able readily to identify the name of the practitioner who is in fact responsible for keeping the records, and the Ministry has asked insurance committees to take steps to ensure that all records bear the correct particulars.

Hypnotism in the Treatment of Asthma

An insurance practitioner who performs a service which he considers outside the scope of medical benefit as defined in the terms of service may charge the insured person for the service if within seven days he notifies the insurance committee on form G.P. 45 whether it was "urgent" (this term has recently been altered to "an emergency") and gives proof that he did possess special skill beyond that ordinarily possessed by a general practitioner. The charge is allowed to stand if the insurance and local medical committees agree that everything is in order. In a case which came up at Manchester recently the details of the "operation" given were:

1. Patient has for years suffered from asthma which has lately become intolerable.
2. Suggestion under hypnotism, for which Mr. E is a suitable case, being extremely susceptible to hypnotism.
3. Not urgent, but it is performed in desperation as all the usual remedies have failed in his case.

The local medical committee stated that in their opinion the "operation" was not within the scope of an insurance practitioner's obligation, and that the practitioner did possess the necessary skill. This case is similar to the London cases, in which psychotherapy was used to cure a painful neck and some other neurosis, and which are awaiting the result of appeal to the Ministry. The London local medical committee (with some dissentients) decided that the service was beyond the scope of medical benefit, the London insurance committee disagreed and decided to get a Ministerial ruling; in Manchester however both committees agreed on the point, so that unless the Ministry upsets this decision hypnotism for the treatment of asthma may be charged for when treating an insured person.

Certification without Seeing the Patient

Another medical service case heard at Manchester raises the question of procedure when complaints are received against insurance doctors.

> A communication dated June 7th was received from an insured person in which he stated he was under domiciliary treatment and had been under his doctor for 18 years, but that he was last visited on April 22nd and since then his doctor had been taken ill and had not visited him; also that his daughter had attended at the doctor's surgery every week for his certificates which had been given without the doctor seeing him, and he asked what was the best course to take. The clerk to the insurance committee reported that a copy of this communication was taken to the doctor by an officer of the committee with a letter pointing out that it was important the patient should receive medical attendance from him personally or by deputy without further delay, and the doctor was found to be confined to his bedroom and unable to visit the patient that day, but he promised to visit him on the following afternoon and said that in his opinion the patient could not have urgently required attention. The patient was also visited and was told that the doctor would visit him on the following day, and upon the man expressing his desire to transfer to another doctor he was informed that he had a card which enabled him to do so immediately, and the procedure for change of doctor was explained. The doctor's reply to the committee's request for his observations upon the patient's statements was also submitted, in which he stated that sickness of a severe nature had completely disabled him for some time, but that from the experience gained during the 18 years the patient had been under his care he was of opinion that visiting was unnecessary, but he regretted that his deputy had not been instructed to visit the case and gave an assurance that a repetition would be avoided. A copy of the doctor's statements was sent to the patient with an inquiry if his letter was intended to be a complaint for investigation by the medical service subcommittee, but no reply had been received to this letter nor to a further communication which had been sent, and he had not transferred to another doctor. A resolution was adopted that the correspondence submitted should be referred to the chairman, vice-chairman, and two medical members of the committee, with power to deal therewith.

Here the chief offence lay in the giving of certificates without seeing the patient. There was a somewhat striking case of a similar nature some little time ago in London, where the doctor gave certificates of incapacity, dating several of these back, and it was eventually proved that at the time the certificates of incapacity were given the insured person was in Wormwood Scrubs for some criminal offence, although the doctor thought he was still in the hospital to which he had been sent. The usual procedure in such cases is to write to the doctor and ask his observation on the statements, and in most cases to require attendance of the doctor and complainant, who in certification cases is often the representative of the approved society, before the medical service subcommittee, who then hear the evidence and decide on the penalty. The hearing may last an hour, to say nothing of time taken in getting to and from the place of hearing, and there is often for the doctor the mental agony of the unknown procedure, "What will they say? . . What will they do?" It is an irksome and invidious procedure for a doctor who has quite honestly, although against regulations, tried to assist the insured person to get his sickness benefit. The doctor is met with "I shall not have anything to live on if I don't get my certificate," or "I forgot to ask the hospital doctor, so as you know he is in hospital will you give me a certificate," or "The agent wants a certificate, and said I was to ask his doctor for one." Out of the kindness of his heart and forgetting the wording *I have examined you on the undermentioned date,* he gives a certificate, which is in effect a cheque on the approved society, and breaks the regulation. On discovery the above procedure then usually begins. Manchester however appears to have adopted the unusual but much more humane course of sending an officer to interview both doctor and patient, to both of whom the position is carefully explained, and eventually the chairman, vice-chairman, and two medical members of the committee deal with the matter. The doctor is put wise without wasting his time and being made to feel like a naughty boy. The patient gets what he wants, namely, a change of doctor, and all is settled without ill-feeling on either side. No doubt for the bad case there should be some sterner method. The whole question of procedure at medical service cases is likely to come up at the annual conference of insurance committees to be held next week at Buxton.

QUEEN MARY'S HOSPITAL, ROEHAMPTON.—The annual report of this hospital for sailors, soldiers, and airmen who lost limbs in the late war, which has now completed its seventeenth year, contains a review of the work done during its existence. Of slightly more than 41,000 men who lost limbs in the war, 24,427 were admitted up to June 30th last for the supply of their first limb, and in many cases also for their second. There have been 35,983 attendances for repairs and renewals, and 103,919 cases have been dealt with through the post. The London County Council is now sending civilian cases from hospitals under its control on conditions similar to those on which cases from the railway companies and other public bodies are admitted.

was without rival as a teacher. The pains he took to illustrate his teaching by lantern and microscope slides was beyond all praise. As a popular lecturer too in subjects relating to medicine he was in great request. His lecture to the British Association in 1915 on curiosities and defects of sight, illustrated by a booklet full of pictures, may be mentioned as an instance of his extraordinary thoroughness. He was lavish both in money and in time when he had agreed to give a lecture. His book on Apostles of Physiology, written in coöperation with Walter Whitehead, is now a treasure for the booklover."

Prof. Stirling married Elisabeth Ferguson Crawford and leaves two daughters and two sons, one of whom is registrar to the Advocate-general, the other a leading consultant in ophthalmology in Manchester. The photograph which we reproduce appeared on the cover of a popular lecture given a few years ago. He had no studio portrait taken but there are many excellent contemporary caricatures of the impression he gave as a teacher, the best being one entitled "A Vacation Nightmare" done by Mr. H. T. Lamb, the war artist, when he was a medical student.

PANEL AND CONTRACT PRACTICE

Approved Society Surpluses

At the twentieth annual conference of the Scottish Association of Insurance Committees, Mr. John Hill, president, dealt with the anomalies of the third valuation. This was, he said, expected to be a critical valuation. The enormous surpluses of the first and the large surpluses of the second valuation were not anticipated. The forecast had again been more or less falsified; for some societies have large surpluses and others small or none at all. Mr. Hill suggested that the segregation of large numbers of insured persons engaged in hazardous occupations to a society of their own had thrown an almost impossible burden upon those societies, and that the other societies were relieved of liabilities that might well have been theirs to share. They knew of well-known societies that, with increasing sickness and serious loss of contribution income, were going to experience desperate times to make ends meet. He did not advocate pooling of all surpluses. But did anyone think there could be a continuance within the Insurance Acts of societies with surplus money they did not know what to do with and, on the other hand, societies at their wits' end to know how to keep solvent? A continuance of these conditions spelt disaster. He was prepared, he said, to take 50 per cent. of all surpluses, and with the funds provided he would first of all make dental benefit statutory. He would cut out all other extra benefits and establish what to his mind was the most urgent need of the insured person—namely, a specialist and consultant service, together with up-to-date diagnostic facilities for the panel practitioner and his patients. The remainder of the fund he would conserve to provide a safeguard to every insured person that their benefits under the Act were sure. What they looked upon as abnormal sickness experience was probably going to be the normal experience for many years to come.

Miss Ritson, controller of insurance for the department of health, pointed out that, according to the International Labour Office, the difficulties in Scotland were common to most countries—lowered contribution income, unemployment, high sickness and disablement rates. As to contributions, there was still in Scotland a very considerable residual burden. The greatest fear, however, was that the sickness and disablement claims were rising. That year they had experienced in Scotland a rise that was frankly disconcerting. The situation in 1932 promised not to be so good as in 1931 and 1930. In Glasgow there had been a 5 per cent. rise in the number of illnesses over 1931. They could not relax their efforts if the new N.H.I. Act was to bring prosperity. A very special responsibility fell on medical practitioners for granting prescriptions and certificates. The causes of heavy incidence in certification would have to be probed, especially as that heavy incidence appeared to be peculiar to certain practices.

Chemists' Remuneration

There has been some evidence of determination on the part of panel chemists to insist that the clause in their agreement, which the Minister of Health wishes to remove in the 1933 contracts, shall be retained. The clause is as follows:

> A chemist shall not give promise or offer to any person any gift or reward (whether by way of a share of or dividend on the profits of the business or by way of discount or rebate or otherwise) as an inducement to or in consideration of his presenting an order for drugs or appliances on a prescription form provided by an insurance committee.

Retail chemists think the removal of this clause will be detrimental to the efficiency of the dispensing service, and that prescriptions would be dispensed on a commercial rather than professional basis as a result of its deletion. The opinion of coöperative societies, which feel themselves to be attacked by the presence of this clause in their contract, is that they should have the right to dispose of their profits in any way they choose without outside control. A conference, representing 12,000 chemists under contract for insurance dispensing, held in London on Sept. 28th, accepted the financial terms offered by the Ministry, provided that the clause in question is retained. Failing agreement they ask for the matter to be submitted to independent arbitration.

Compensation for an Eye

It was pointed out in these columns recently (p. 705) that a workman is not necessarily entitled to compensation from his employer simply because he has lost an eye during the course of his employment. The Council of British Ophthalmologists, in a report on compensations for eye injuries, state they are of opinion that the Workmen's Compensation Acts should be amended in such a way as to secure to the injured workman, in addition to the benefits at present allowed in respect of loss of earning power, a lump-sum payment to compensate for permanent loss of function and/or disfigurement. The report adds that this principle is already embodied in certain schemes operated by private firms in this country and the principle of lump-sum payments for partial or total loss of vision and other ocular disabilities was recognised in the regulations for the granting of war pensions. It was thought this would result in less delay in settlement of claims, less subsequent demoralisation with deterioration of eyesight and health, and also less litigation.

Practitioners' Names

A circular letter from the Ministry of Health calls attention to the difficulty sometimes experienced by regional medical officers in their inspection of medical records, owing to the inaccuracy of the names on the issue of a century ago a lively complaint of the way in which the hospital staff wasted the time of the students—Mr. Guthrie only being punctual in his attendance; and regretted the absence from our present-day columns of such homely and libellous details. Sir Holburt, in reply, attributed his priority in speaking to the fact that he had once been addressed as "The Very Rev. the Dean of St. Bartholomew's Hospital." He spoke of *improvements in the curriculum* of medical education, to be suggested by a committee appointed to consolidate, improve, and unify medical education in the metropolis, where, he said, the problem was of peculiar difficulty owing to the requirements of the various examining bodies. Referring to the British Pharmacopœia issued that day, he continued to cherish a hope for the issue of a basic pharmacopœia for the benefit of the medical student. Dr. Foxley Norris told a story about a Scottish ferry with an exhaustive tariff for different kinds of vehicles and passengers, which broke down when a menagerie came that way; if you fully retail the list of guests you may, he said, leave out the elephants. He was himself the great grandson of Pott's fracture, and as four generations of forbears on his mother's side hung on the walls of the College of Surgeons he did not feel a total stranger at the gathering. Incidentally he revealed that the chairman, as chieftain of the Macgillivrays, should have been wearing the kilt. The toast of "The Chairman" was proposed by Dr. Thompson Barron, who told stories of student days which inculpated himself as much as Dr. Watson, who rounded on him later with the outspokeness of one who had lived a long while in the West Riding. At the conclusion of his lively reminiscences, tribute was paid to the team-work of the dinner secretaries, Dr. W. Ernest Lloyd and Dr. Peter Kerley.

St. Bartholomew's Hospital

Prof. G. E. Gask presided at the old students' dinner on Oct. 3rd, when there was a very large attendance of old Bart.'s men from all parts of the country, and an unusual number of distinguished guests. In proposing "The Hospital and Medical College," Mr. Gask made the traditional survey of past, present, and future. He referred with feeling to a number of old students who had maintained the traditions of the school—Ross, Andrewes, Calvert, Legge, and many others. To the memory of Nigel Cohen, a present student killed in an aeroplane crash, a little garden had been dedicated in the hospital square. Dealing with the living, he congratulated the treasurer, Lord Stanmore, on becoming a member of the Privy Council, Sir Holburt Waring and Prof. Langdon Brown on appointment to high office. No outstanding event, he said, had occurred during the year, but the new surgical block continued to approve itself. The governors' plan of continuous steady development went on, and hope still burned that the whole hospital would gradually be rebuilt. In the medical school last year there were 126 full students; this year far more, 90 per cent. of them university graduates or undergraduates. There had been many successes in the athletic field, including a nearly successful attempt to swim the Channel; next year, with a bit of luck, we might hope to see a Bart.'s man at the summit of Mount Everest. The present-day student, he was satisfied, showed no lack of initiative, but medical education had not kept pace with the golden age of medicine in which we were living. The teaching staff numbered 102 individuals; various departments were bursting for room and the school must expand. Now came the opportunity, almost too good to be true, of transferring the whole college to the Charterhouse site, an ideal in support of which the teaching staff had put up the sum of £12,000, almost the equivalent of a whole year's emolument. The proposed expansion was not just for the honour and glory of Bart.'s; the medical schools of London, he felt, must increasingly unite, amalgamate, and coöperate. The scheme was to promote British medicine in its biggest and widest sense. Mr. Reginald Vick, as warden of the residential college, proposed "The Guests," regretting that the Medical College could offer the boundlessly hospitable city fathers in these hard times nothing more than a nourishing and wholesome repast. He welcomed the presence of the treasurer and almoners, the heads of the Medical Services, the city dignitaries, among them Sir George Wilkinson who that morning had received the accolade, the masters of four city of companies and of the Apothecaries, the Regius professor medicine at Oxford, the quondam Bishop of Chester, the high master of St. Paul's School, the senior surgeons of Guy's and St. Thomas's, and especially Sir Henry Newland, president of the Royal Australasian College of Surgeons. Sir Farquhar Buzzard, on behalf of the guests, returned thanks for its good cheer to a medical school which, he admitted, was one of the most progressive on the north side of the river. In the course of the evening several old students agreeably entertained the company, Dr. Nicholson with a song, Mr. Richards with a violin solo, and Dr. Cullinan with sleight of hand.

Middlesex Hospital

Mr. Eric Pearce Gould, who took the chair at the annual dinner at the Savoy Hotel on Oct. 4th, said that even the economies of the past year had had their silver lining; for instance the setting-aside of rooms for paying patients was providing experience which would be useful when the Woolavington block was opened next year. They had also had a golden lining; for the suggestion that research should be curtailed had led Mr. S. A. Courtauld to give £20,000 to prevent this happening. As regards the achievements of the year, the students (though not the nurses) were still hiding their athletic prowess under a bushel; however, in another branch, the hospital had doubled its representation on the council of the Royal College of Surgeons, and by the addition of Mr. Gordon-Taylor and Mr. A. E. Webb-Johnson had contributed not only surgical distinction but administrative ability. But the greatest changes of the past twelve months were structural. The steel framework of the east wing was now in position and the work of casing it had begun. The money for the steel and most of the casing was available, but a considerable further sum would be required for completion and equipment, and an appeal to the public would be made within a few days. If it was said that this was not the time for expansion of the voluntary hospitals, his answer was that these hospitals were the standard by which all hospitals must be judged, and they must continue to lead. In two years' time, if all went well, the building would be complete. Mr. S. A. Courtauld, chairman of the council of the medical school, mentioned that Middlesex men (Dr. J. G. Scadding and Mr. P. B. Ascroft) had won gold medals in the M.D. and the M.S. examinations of the University of London. The entrance to the school in the past year had been far the highest, certainly since the war, and with the hope of better times the hospital could look forward confidently to its centenary in 1934. Dr. Izod Bennett, dean of the medical school, said that his chief task was to bring about coöperation; but what was called team-work, if unintelligently applied, could do as much harm as it could do good in other circumstances—a statement which he supported by a moving story. Mr. H. W. Salmon, with the licence of a senior Broderip scholar, was fluently shocking; but Mr. Webb-Johnson in proposing The Guests soon sobered his hearers by recalling the great benefactions received from some of them. His toast was coupled with the name of Major J. J. Astor, M.P., and he told for the first time how Major Astor had come to the aid of the medical school in its difficulties. The chair of physiology had an endowment worth over £32,000. This was the anonymous gift of Major Astor twelve years ago, and application was now being made to the University of London to have the professorship linked with his name. Major Astor in his reply said that organisations like the Middlesex were characterised by sympathy, efficiency, and cheerfulness. Those who work in hospitals had these qualities so highly developed that he wondered why they could not eliminate in other people, perhaps by a simple operation, such qualities as mistrust and pessimism: at any rate, he said, they had done this to their guests to night. Dr. G. E. S. Ward spoke of the chairman's services to the Hospital, and those of his father before him, and Mr. Pearce Gould's health was drunk with musical honours.

Leeds University

At recent examinations the following candidates were successful:—

M.D.

G. F. Bramley (with distinction) and R. C. Hanson.

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—G. Cohda, A. Cohen, P. Crann, T. A. Divine, R. W. Rutter, T. Simpson, A. Smith, J. F. Warin, and Lydia A. Wilson.

Part II.—B. W. A. Fleming, J. J. Fry, J. S. Gourlay, E. James, J. Littlewood, R. Raines, M. Rosental, S. Strasburg, and J. Taylor.

Part III.—M. Rosental (second-class honours), B. W. A. Fleming, J. J. Fry, J. S. Gourlay, F. R. W. Hemsley, E. A. James, E. James, F. C. Leach, J. Littlewood, R. Raines, S. Strasburg, and J. Taylor.

Old Regulations.—M. A. Rashid.

FINAL EXAMINATION FOR L.D.S.

C. L. Davidson, J. D. Sykes, F. Wilcock, and G. O. Wood.

The William Hey Medal and the West Riding Panel Practitioners' Prize have been awarded to E. Gledhill.

Chadwick Lectures

On Thursday, Oct. 20th, Sir Humphry Rolleston will give a lecture on the Pioneers and Progress of Preventive Medicine. It will be delivered in the theatre of the Royal United Services Institution, Whitehall, London, at 5.15 P.M. Particulars of subsequent lectures may be had from the secretary of the Chadwick Trust, 204, Abbey House, Westminster.

MEDICAL NEWS

HOSPITAL DINNERS

St. Mary's Hospital

Sir Joseph Skevington, senior surgeon to the King Edward VII. Hospital, Windsor, presided over the annual dinner of the medical school, held at the Trocadero Restaurant on Sept. 30th. Proposing the first toast, Lieut.-Colonel H. E. Verey, chairman of the hospital board, said that the great event of the year had of course been the rebuilding of the medical school and pathological institute, which would, he hoped, be finished and occupied this time next year. The policy of buying the island site in 1927 had been more than justified, and though the hospital was still feeling severely the financial sacrifice then required, he hoped that as soon as the present building had been paid for a united effort would be made to complete the new nurses' home. The expansion of St. Mary's depended on this project and the need was urgent, especially in view of the powers now given to public authorities to construct State-supported hospitals. The policy of St. Mary's had been, wherever possible, to secure the coöperation of the local authorities so as to retain all the public and semi-public medical departments which were essential if the medical school was to provide the complete curriculum on one and the same premises. By this policy they had succeeded in retaining the tuberculosis dispensary, the treatment of L.C.C. school-children, and a great number of other public health services, and next April a maternity ward was to be opened whose cost of maintenance would be met by the Paddington borough council. Thus, without any maintenance cost to the hospital, enough clinical material would be provided for the instruction of students. He felt that the treatment of the sick and the advancement of science depended on the freedom, elasticity, individuality, flexibility, initiative, and responsiveness which in this country had always been the outcome of voluntary work. After referring to the death of Mr. Prideaux, chairman of the board of management for more than eleven years, and Mr. Stower, a vice-chairman—from both of whom the hospital would receive large legacies—Colonel Verey went on to speak of the appeal being made in connexion with the centenary of Lewis Carroll. Some £3000 had already been contributed towards the £10,000 that was needed to establish a model children's ward at St. Mary's, and no fitter memorial could be found for a man who had loved and amused children, and whose nephew, Prof. B. J. Collingwood, was now a member of the hospital staff.—Dr. C. M. Wilson, dean of the medical school, spoke of the lead which St. Mary's had given in arranging post-graduate courses for old students. With an entry this year of 60, and with the new buildings up, it might be imagined that the work of advancement was over; but life, he insisted, was movement, and without further effort their plans could not be realised.—Dr. Wilfred Harris, in proposing the health of the chairman, was limited by a ruling that speeches should be very short; but his brief remarks reflected the goodwill of the company, and Sir Joseph Skevington expressed his thanks.

St. George's Hospital

The annual dinner of the medical school was held at the Hyde Park Hotel on Oct. 1st. The chair was taken by Sir Crisp English, senior surgeon to the hospital, and about 150 past and present St. George's men attended. Among the guests were Lord Greville, treasurer of the hospital, Captain Evan Wallace, M.P., Sir Henry Newland, of Adelaide, and Dr. G. C. Anderson, medical secretary of the British Medical Association. Captain Wallace, in proposing the toast of the Medical School said that he and his colleagues of the house committee were very proud of their school, and wished that, with the help of an enlightened public, they could provide a more modern and efficient building for it to work in. In the course of a witty speech he reminded the medical profession that, although its rewards were precarious, it had the satisfaction of being universally respected and honoured, whereas his own profession was almost universally despised and made fun of. Dr. Anthony Feiling, dean of the medical school, who responded, said that the school was in an exceptionally healthy state, apart from its actual bricks and mortar. Although they might dream of tessellated pavements and marble swimming-baths, excellent work was being done in the old surroundings. The examination results in the past year had been above the average. Dr. Feiling also referred to the death of two distinguished St. George's men during the past year—Sir William Bennett and Dr. F. G. Penrose. Mr. P. T. Cooper, who also responded for the school, expressed the point of view of the students and those recently qualified. He managed to make amusing observations at the expense of many members of the staff. Mr. Ivor Back, in proposing the health of the Chairman, spoke of Sir Crisp's approaching retirement from the active staff. It was common knowledge that the chairman had been successful in his profession, and he had heard it said that he had had a lot of luck. Success in the medical profession, however, was not due to luck. The goddess of fortune would pay a man no attention unless she perceived the qualities that make for greatness—namely, kindness, tolerance, and a knowledge of human nature, allied to a first-class technical skill and a sound clinical instinct. All of these things the chairman possessed in an extraordinary degree. Further, during his life on the active staff, he had been a great friend and a great servant of the hospital which gave him his medical birth and nurture, and the whole of his ardent spirit had been devoted to the "Corner." They wished him many years of health and vigour in which to conquer fresh worlds and pastures new. Sir Crisp English expressed his gratitude to the speakers and to all his friends present. He took the opportunity of thanking those who had helped him during his life at the hospital—his house surgeons, the sisters and nurses, the lay committee members, the treasurer, the secretary, and the porters. He would always retain his love for the hospital and would always resist changes which might tend to destroy its individuality.

Charing Cross Hospital

In the absence of Dr. William Hunter, Mr. C. Carter Braine presided over the annual dinner of the medical school at Gatti's Restaurant on Oct. 1st. He had previously occupied the chair, he said, in 1894, and he felt that once was enough. His experience went back over 50 of these dinners, and he recalled old days at the Holborn Restaurant and elsewhere, when the programme always included two songs—The Laird o' Cockpen, from Cantlie, and Ten Thousand Miles Away. What a contrast there was between the hospital when he entered it and the hospital of to-day! Then it was dull, dismal, and badly ventilated; there were rings screwed in the floors of the wards—for the reduction of dislocations. Then came antiseptic methods. At 9 P.M. the night before an operation the carbolic spray was started in the theatre, and when the surgeon began work at 9 A.M. next day the atmosphere was that of a London fog, so that subsequent carboluria was common. There was only one operating day. The patients were admitted two or three days before the operation, to get acclimatised. They often did get acclimatised—and walked out. Mr. Braine described himself as the last of the septic house surgeons.—Mr. Crook, dean of the medical school, began by acknowledging the kindly efforts of laymen to leave their bodies—some with appendix intact—for dissection; but rapidly passed on to the more congenial subject of football. The school, he said, had beaten University College Hospital at rugger; "and in many ways," he added wistfully, "we very nearly beat George's." Mr. Bright Banister recalled the chairman's power to induce perfect anæsthesia with a smell of indiarubber and a powerful personality. In proposing his health he spoke in very warm terms of Mr. Carter Braine's association with the hospital, in which he had always shown himself an honour to the profession. By way of reply the chairman said that he had not expected to enjoy his evening, but he had certainly done so; and he hoped that everyone else had done the same. The general air of the gathering, and the applause greeting the songs of Dr. S. Taylor Harris and Mr. Frank Hart, left no doubt that this hope was fully realised.

Westminster Hospital

Past and present members of the medical school sat down to dinner at Grosvenor House, Park-lane, on Oct. 1st, when the chair was taken by Dr. R. Nimmo Watson, honorary physician to the Royal Bath Hospital at Harrogate. After an excellent repast the toast of "Hospital and Medical School" was proposed by Mr. Arthur Evans, surgeon to the hospital, who recounted the doings of the past twelvemonth, with particular reference to the development of new laboratories under Dr. R. J. V. Pulvertaft. He welcomed the new out-patient clinic for early mental cases which was breaking fresh ground, and foreshadowed not only prosperity but continued expansion for the Westminster school. In reply, Dr. Bennett A. Coles, an old resident, paid a tribute to his mentors, painting one by one a series of word-pictures which were appreciated as much by the victims as by his other hearers. He intended, as he said, to get his own back—and he did. Dr. Arnold Stott proposing "The Visitors," coupled with the toast the names of Sir Holburt Waring, P.R.C.S., and the Dean of Westminster. He wanted to express gratitude to the two governors present, Mr. Austin Taylor and Lt.-Col. H. C. Bulkeley, who indulged in the kindly practice of providing the hospital, including the sports ground, with machines of all kinds. In welcoming the representative of THE LANCET, Dr. Stott read from an

Mr. H. Morriston Davies: Lung Surgery. (This course is open only to graduates and students of the School.)

SOCIETY FOR THE STUDY OF INEBRIETY.

Tuesday, Oct. 11th.—4 P.M. (at 11, Chandos-street, W.). Dr. J. R. Rees: Psychological Factors in the Prevention and Treatment of Alcohol and Drug Addiction.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Oct. 10th, to Saturday, Oct. 14th.—National Hospital for Diseases of the Heart, Westmoreland-street, W. All day course in Cardiology, lectures and démonstrations.—Chelsea Hospital for Women, Arthur-street, S.W. Course in Gynæcology, mornings and/or afternoons.—Metropolitan Hospital, Kingsland-road, E. All day course in General Medicine and Surgery, especially suitable for general practitioners.—St. John's Hospital, Leicester-square, W.C. Afternoon and evening course in Dermatology. Clinical instruction and lectures.—Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C. All day course in Diseases of the Ear, Nose, and Throat.—Royal Albert Dock Hospital, S.E. Week-end Course in Clinical Surgery. Saturday and Sunday all day.—London Light Clinic, Ranelagh-road, S.W. Evening lecture-demonstration in Physical Medicine. Mondays and Wednesdays, 8 to 9 P.M.—These courses are open only to Members of the Fellowship of Medicine.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday, Oct. 13th.—9 P.M., Dr. W. Sheldon: Nervous Habits in Children.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

Monday, Oct. 10th, and following Tuesday and Wednesday at 4 P.M., Prof. Max Neisser (Frankfort): Some New Investigations Regarding Old Bacteriological Problems. (Harben lectures.)

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

Tuesday, Oct. 11th.—5 P.M., Dr. W. N. Goldsmith: Anatomy and Physiology of the Skin.

Thursday.—5 P.M., Dr. I. Muende: Pathology Demonstration.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate.

Wednesday, Oct. 12th.—4.30 P.M., Dr. E. R. Clarke: Some Recent Advances in the Diagnosis and Treatment of Pulmonary Tuberculosis.

ANCOATS HOSPITAL, Manchester.

Thursday, Oct. 13th.—Dr. W. J. S. Reid: Anæmias of Chlorotic Type.

MANCHESTER ROYAL INFIRMARY.

Tuesday, Oct. 11th.—4.15 P.M., Mr. P. R. Wrigley: Goitre.

Friday.—4.15 P.M., Mr. J. Morley: Demonstration of Surgical Cases.

Appointments

City of London Maternity Hospital: Lannaman, L. J., L.R.C.P. Lond., M.R.C.S., Senior Resident Medical Officer; Davies, J. O. F., M.B., B.S. Lond., Assistant Resident Medical Officer.

Vacancies

For further information refer to the advertisement columns.

Barry Urban District Council Surgical Hospital.—H.S. At rate of £200.

Beckenham, Bethlem Hospital, Monk's Orchard, Eden Park.—Res. H.P. At rate of £150.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Birmingham, Queen's Hospital.—Biochemist. £500.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.

Brentwood, High Wood Hospital for Children.—Asst. M.O. £350.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—Hon. Neurologist, Hon. Dermatologist, Hon. Gynæcologist. Hon. Ophthalmic Surgeon.

Canterbury, Borough Mental Hospital.—Asst. M.O. £350.

Cheltenham General and Eye Hospitals.—Hon. Surgeon for Ear, Throat, and Nose Diseases.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Great Barrow.—H.P. At rate of £100.

Chester Royal Infirmary.—H.S. £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Colindale Hospital, Colindale-avenue, N.W.—Sen. Asst. M.O. £500.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Durham County Hospital.—Second H.S. £150.

East London Hospital for Children, &c., Shadwell, E.—Asst. Surgeon to Nose, Throat, and Ear Dept. Res. H.P. £125. Also Asst. Physician. £40.

Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150. Also Secretary. £300–£600.

Farnborough Institution Hospital, Kent.—Res. Asst. M.O. £250.

Gloucester County and City Mental Hospital.—Jun. Asst. M.O. £350.

Gloucester, Gloucestershire Royal Infirmary, &c.—Hon. Anæsthetist.

Hampstead General and North-west London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hove Hospital.—Res. M.O. £200.

Hull Royal Infirmary.—Asst. Pathologist. 10 gns. per week.

Italian Hospital, Queen-square, W.C.—Hon. Asst. Anæsthetist.

Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.

Leeds Hospital for Women.—H.S. At rate of £100.

Liverpool, County Mental Hospital, Rainhill.—Asst. M.O. £500.

London County Council.—Temporary District M.O.'s. At rate of £156 and £150.

Lowestoft, St. Luke's Hospital.—Sen. Asst. M.O. £500.

Manchester City Education Committee.—Asst. School M.O. £600.

Manchester, Royal Children's Hospital.—Asst. M.O. for Out-patients' Dept. At rate of £150.

Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.

Medway Institution Hospital, Kent.—Res. Asst. M.O. £250.

Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.

Monmouthshire County Council.—Asst. M.O. £500.

Nottingham, Harlow Wood Orthopædic Hospital.—Asst. to the Surgeon in Charge. £450.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—Hon. Asst. Surg. to Nose, Throat, and Ear Dept.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstetric Surgeon to Out-patients.

Radium Institute, Riding House-street, W.—H.S. At rate of £150.

Reading, Royal Berkshire Hospital.—Res. Anæsthetist. £150.

Rotherham Hospital.—H.P. £180.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Two Registrars. Each £105.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.

St. Bartholomew's Hospital, London, E.C.—Asst. Phys.

St. John's Hospital, Lewisham, S.E.—Hon. Anæsthetist.

St. Mary's Hospital, W.—Med. Supt. £400.

St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £175.

South Shields, Harton Hospital.—H.S. At rate of £150.

Taunton and Somerset Hospital.—H.S. £100.

Torquay, Torbay Hospital.—H.S. £175.

Uxbridge, Hillingdon County Hospital.—Chief Asst. Radiographer. £225.

Violet Melchett Infant Welfare Centre, &c., Wellington-street, Chelsea.—M.O. £50.

West London Hospital, Hammersmith-road, W.—Hon. Anæsthetist. Also Dermatologist and Physician.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. H.S. and Jun. H.S. At rate of £150 and £100 respectively.

Westminster Hospital, Broad Sanctuary, S.W.—Jun. Asst. Pathologist. At rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Lymm (Chester).

Births, Marriages, and Deaths

MARRIAGES

Jackson—Hallinan.—On Oct. 1st, at the Church of the Holy Cross, Catford, William Eric Jackson, LL.B., Barrister-at-Law, to Eileen Hallinan, M.R.C.S., L.R.C.P., younger daughter of the late J. T. Hallinan, J.P., and Mrs. Hallinan, of Canadian-avenue, Catford.

Millis—Osborne.—On Sept. 29th, at Christ Church, Rathgar, Dublin, Grosvenor Charles Millis, M.C., M.A., M.B., M.R.C.P., to Ruth Henderson, second daughter of the Rev. Dr. Osborne and Mrs. Osborne, of Fairfield House, Rathgar, Dublin.

Rutherfurd—Jackson.—At Kilmacolm Old Kirk, on Sept. 21st 1932, by the Rev. Foster Franklin, M.A., and the Rev. John W. Coutts, M.A., Richard Napier Rutherfurd, B.Sc., A.M.I.C.E., son of the late Henry Rutherfurd, M.A., M.B., C.M., and Mrs. Rutherfurd, 20, Bute-gardens, Glasgow, to Elinor Drinkwater Jackson, F.R.C.S. Edin., elder daughter of Mr. and Mrs. S. Douglas Jackson, Shenvalla, Kilmacolm.

Stewart—Pulman.—On Sept. 28th, at St. Philip's Church, Girlington, Bradford, Henry Hamilton Stewart, M.A., F.R.C.S., to Edna Mary, elder daughter of Mr. and Mrs. Harold H. Pulman, of Hazel Mount, Chellow Dean, Bradford.

DEATHS

Lilley.—On Sept. 29th, Frederic Graham Lilley, L.D.S. R.C.S. Eng., aged 30 years.

Stirling.—On Oct. 1st, at The Lindens, Victoria Park, Manchester, William Stirling, LL.D., D.Sc., M.D., late Brackenbury Professor of Physiology, Victoria University, Manchester, in his 82nd year.

Warliker.—On Sept. 27th, at a nursing-home, after a short illness, Lieut.-Colonel D. P. Warliker (retired), I.M.S., of Wessex Way, Golders Green.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

University of London

The Common Council of the City of London have passed a resolution recommending that £100,000 be given towards the cost of the new University hall.

London Hospital Medical College.—The Schorstein memorial lecture will be delivered in the anatomical theatre of the College at 4.30 P.M. on Thursday, Oct. 13th, by Dr. Otfrid Foerster, professor of neurology in the University of Breslau. His subject will be Dermatomes in Man. Members of the medical profession are invited to attend.

Royal College of Surgeons of England

Demonstrations of museum specimens, for advanced students and medical practitioners, will be given in the theatre of the College at 5 P.M. on Mondays and Fridays, from Oct. 17th to Nov. 7th. The Friday demonstrations will be by Sir Arthur Keith, whose subjects will be: (1) Bone Lesions Produced in Syphilis and in Yaws; (2) the Antiquity of Certain Diseases, particularly of Syphilis; and (3) the Various Forms of Teratoma which Arise in the Notochordal Tract. On Mondays, Oct. 17th and 24th, Mr. C. P. G. Wakeley will deal with Innocent and Malignant Tumours of the Alimentary Tract. Mr. R. Davies-Colley will speak on Intestinal Cysts and Diverticula (Oct. 31st) and on Tumours of the Jaw (Nov. 7th).

West London Medico-Chirurgical Society

The first meeting of the session will be held at the West London Hospital at 8.30 P.M. to-day, Friday, Oct. 7th, when Dr. Julius Burnford will deliver his presidential address entitled: A Therapeutic Survey. The subtitle of the address is: "Fifty million bottles of medicine were issued to nsured persons during the year 1931."

South-West London Medical Society

This society will hold its annual dinner on Wednesday next, Oct. 12th. The first meeting of the session will be held on Oct. 26th, at 8.45 P.M., when Dr. W. Langdon Brown, Regius professor of physic in the University of Cambridge, will deliver an address on Allergy and Some Allergic Diseases. The meetings are held at the Bolingbroke Hospital, Wandsworth.

Fellowship of Medicine and Post-Graduate Medical Association

A course in general medicine and surgery will take place at the Miller General Hospital, Greenwich, from Oct. 17th to 29th. The whole of each day will be occupied with demonstrations, operations, and lectures, and the course is primarily designed for general practitioners. A week-end course in clinical surgery will be given at the Royal Albert Dock Hospital on Saturday and Sunday, Oct. 15th and 16th, occupying the whole of each day with demonstrations, and another, in obstetrics, will take place at the City of London Maternity Hospital on Saturday and Sunday, Oct. 29th and 30th. A weekly course on *Uterine Infections in Obstetrics and Gynæcology* is given at the St. Mary Abbots Hospital, Kensington; not more than four post-graduates may attend any one week. A series of afternoon lectures on renal disease will be given at the Medical Society of London, at 4 P.M. on Tuesdays from Oct. 18th to Dec. 13th; these are free to members of the Fellowship. A panel of teachers, prepared to give clinical instruction, has been formed, and clinics may be attended by arrangement. Further details may be had from the secretary of the Fellowship, at 1, Wimpole-street, London, W.1.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

C. J. Waring to be Surg. Lt.

The following appointments are notified: Surg.-Comdrs. A. G. Taylor to *Berwick;* L. F. Strugnell to *Vivid,* for Devonport Barracks; J. L. Priston to *Glorious;* and J. F. Haynes to *Sandhurst.*

Surg. Lt.-Comdr. (D) D. Barker to *Pembroke,* for R.N.B., Chatham.

Surg. Lt. H. D. Plunkett to *Vivid,* for R.N.B., Devonport.

ROYAL ARMY MEDICAL CORPS

Maj. H. J. G. Wells retires on retd. pay.

Capt. T. A. J. M. Dodd retires receiving a gratuity.

Capt. R. Le G. Worsley relinquishes his temp. commn. and is granted the rank of Capt.

INDIAN MEDICAL SERVICE

Lt. E. B. Eedle to be Capt.

Capt. M. N. Khanna relinquishes his temp. commn.

ROYAL AIR FORCE

Flight Lt. R. J. K. Chattey relinquishes his commn. on completion of service.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 10th.—4.30 P.M., UNITED SERVICES. Group Captain A. W. Iredell: An Account of Mosquito-proofing Carried Out by the Royal Air Force in India. (Presidential Address.)

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Mr. Philip Turner: 1. Lumbar Hernia. Mr. Harold Edwards: 2. Sarcoma of Nose with Apparent Cure. Dr. Geoffrey Evans and Dr. R. G. Anderson: 3. Hereditary Ataxia. Dr. F. Parkes Weber: 4. *Persistent Œdema of Right Lower Limb. Other cases will* be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Mr. A. C. Hudson: Some Surgical Experiences Relative to Disorders of the Lens. (Presidential Address.) Cases: Mr. A. C. Hudson: 1. Arachnodactyly with Dislocated Lenses. 2. Iridotomy for Dislocated Lenses. 3. Sarcoma of Choroid. Mr. Humphrey Neame: 4. Detachment of the Retina treated by Multiple Cautery-puncture, over 5 years' old. *Other cases will be shown.*

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 10th.—8 P.M., Annual General Meeting: 8.30 P.M., Presidential Address by Sir John Broadbent on Recent Advances in Our Knowledge as to the Ætiology and Treatment of Some of the Acute Infective Fevers.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

THURSDAY, Oct. 13th.—3.30 P.M., Sir William Hale-White: Bacilluria.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Oct. 11th.—9 P.M. (at the Great Western Royal Hotel, Paddington), Mr. A. S. Blundell Bankart: Manipulative Surgery in General Practice.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, Oct. 13th.—8.30 P.M. (at Hammersmith Hospital), Sir H. Gillies: Plastic Surgery.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, W.

THURSDAY, Oct. 13th.—8.30 P.M., Dr. Seif, of Munich: Opening Address.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL POST-GRADUATE COURSE.

WEDNESDAY, Oct. 12th.—10.15 A.M., Dr. P. N. Panton: Staphylococcal Infection. 11 A.M., Dr. Donald Hunter: The Treatment of Anæmia. 11.45 A.M., Mr. Hugh Cairns and Dr. W. Russell Brain: Discussion on the Treatment of Head Injuries and their Sequels. 1.30 P.M., Mr. Alan Perry: Subject to be announced later. 2 P.M., Mr. Norman Patterson: Operations. [illegible] 2 P.M., Dr. George Riddoch: [illegible] 2 P.M., Mr. E. C. Lindsay [illegible] 3 P.M., Dr. A. E. Clark-Kenn[illegible]tion: Anasarca and its Treatment. 3 P.M., Dr. Maitland Jones: Demonstration of Cases.

THURSDAY.—10 A.M., Mr. F. Muecke: Practical Points in Diseases of the Ear, Nose, and Throat. 11 A.M., Dr. W. J. O'Donovan: Quackery in Dermatology. 12 A.M., Mr. Hugh Lett: Cystitis. 1.30 P.M., Mr. W. S. Perrin: Anal Fistula. 2 P.M., Dr. John Parkinson: Demonstration of Cases. 2 P.M., Mr. W. Morris: Tonsil Operations. 2 P.M., Mr. Victor Lack and Mr. R. A. Brews: [illegible] 3 P.M., Dr. R. A. Rowlands: War[illegible] Prof. O. Foerster: Schors[illegible] in Man.

FRIDAY.—10 A.M., Mr. R. Milne: The Undependable Knee. 11 A.M., Mr. Eardley Holland: *Indications for* Inducing Abortion. 12 A.M., Dr. Cecil Wall: The Management of Pulm[illegible] 1.30 P.M., Dr. G. Vilvandré: X Ray [illegible].M., Mr. A. J. Walton: Surgical [illegible] Mr. G. E. Neligan [illegible] V. W. Dix: Demons[illegible] P.M., Dr. O. Leyton: Ward [illegible] P.M., Dr. Robert Hutchis[illegible] 5 P.M., Dr. S. P. Bedson [illegible] *Filtrable Viruses and* its Signi[illegible] *Daly: Demonstration* of Methods o[illegible]

SATURDAY.—10 [illegible] Thompson: The Diagnosis of [illegible] A.M., Mr. Russell Howard: W[illegible] 12 A.M., Mr. A. J. Walton: Lec[illegible]n Carcinoma of the Stomach. (This course is for former students of the London Hospital only.)

UNIVERSITY COLLEGE HOSPITAL POST-GRADUATE COURSE.

THURSDAY, *Oct. 13th.—10* A.M., *Dr. F. J. Poynton:* The Dawn of Organic Heart Disease. 11 A.M., Dr. A. M. H. Gray: Eczema. 11 A.M., Mr. Julian Taylor and Dr. K. E. Harris: Demonstration of Cases of Toxic Goitre. 2 P.M., Mr. E. A. Peters: Naso-pharyngeal Sepsis in Relation with Chronic Bronchitis and Emphysema. 3 P.M., Mr. E. K. Martin: Carcinoma of Colon.

FRIDAY.—10 A.M., Sir Thomas Lewis: Fainting Attacks. 11 A.M., Mr. F. J. F. Barrington: *Treatment of Senile Enlargement* of Prostate. 2 P.M., Prof. A. E. *Boycott:* Carcinoma of Lung. 2 P.M., Mr. *Clifford* White: Chronic Pelvic Pain in Women. 3 P.M., Mr. H. Morriston Davies: Lung Surgery. (This course is open only to graduates and students of the School.)

SOCIETY FOR THE STUDY OF INEBRIETY.

TUESDAY, Oct. 11th.—4 P.M. (at 11, Chandos-street, W.). Dr. J. R. Rees: Psychological Factors in the Prevention and Treatment of Alcohol and Drug Addiction.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 10th, to SATURDAY, Oct. 14th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. All day course in Cardiology, lectures and démonstrations.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Course in Gynæcology, mornings and/or afternoons.—METROPOLITAN HOSPITAL, Kingsland-road, E. All day course in General Medicine and Surgery, especially suitable for general practitioners.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Afternoon and evening course in Dermatology. Clinical instruction and lectures.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. All day course in Diseases of the Ear, Nose, and Throat.—ROYAL ALBERT DOCK HOSPITAL, S.E. Week-end Course in Clinical Surgery. Saturday and Sunday all day.—LONDON LIGHT CLINIC, Ranelagh-road, S.W. Evening lecture-demonstration in Physical Medicine. Mondays and Wednesdays, 8 to 9 P.M.—These courses are open only to Members of the Fellowship of Medicine.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Oct. 13th.—9 P.M., Dr. W. Sheldon: Nervous Habits in Children.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

MONDAY, Oct. 10th, and following TUESDAY and WEDNESDAY at 4 P.M., Prof. Max Neisser (Frankfort): Some New Investigations Regarding Old Bacteriological Problems. (Harben lectures.)

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

TUESDAY, Oct. 11th.—5 P.M., Dr. W. N. Goldsmith: Anatomy and Physiology of the Skin.

THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate.

WEDNESDAY, Oct. 12th.—4.30 P.M., Dr. E. R. Clarke: Some Recent Advances in the Diagnosis and Treatment of Pulmonary Tuberculosis.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 13th.—Dr. W. J. S. Reid: Anæmias of Chlorotic Type.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Oct. 11th.—4.15 P.M., Mr. P. R. Wrigley: Goitre.

FRIDAY.—4.15 P.M., Mr. J. Morley: Demonstration of Surgical Cases.

Appointments

City of London Maternity Hospital: LANNAMAN, L. J., L.R.C.P. Lond., M.R.C.S., Senior Resident Medical Officer; DAVIES, J. O. F., M.B., B.S. Lond., Assistant Resident Medical Officer.

Vacancies

For further information refer to the advertisement columns.

Barry Urban District Council Surgical Hospital.—H.S. At rate of £200.

Beckenham, Bethlem Hospital, Monk's Orchard, Eden Park.—Res. H.P. At rate of £150.

Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Asst. M.O. £300.

Birmingham, Queen's Hospital.—Biochemist. £500.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.

Brentwood, High Wood Hospital for Children.—Asst. M.O. £350.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—Hon. Neurologist, Hon. Dermatologist, Hon. Gynæcologist. Hon. Ophthalmic Surgeon.

Canterbury, Borough Mental Hospital.—Asst. M.O. £350.

Cheltenham General and Eye Hospitals.—Hon. Surgeon for Ear, Throat, and Nose Diseases.

Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Great Barrow.—H.P. At rate of £100.

Chester Royal Infirmary.—H.S. £150.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.

Colindale Hospital, Colindale-avenue, N.W.—Sen. Asst. M.O. £500.

Coventry and Warwickshire Hospital.—Res. H.S. £125.

Durham County Hospital.—Second H.S. £150.

East London Hospital for Children, &c., Shadwell, E.—Asst. Surgeon to Nose, Throat, and Ear Dept. Res. H.P. £125. Also Asst. Physician. £40.

Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150. Also Secretary. £300–£600.

Farnborough Institution Hospital, Kent.—Res. Asst. M.O. £250.

Gloucester County and City Mental Hospital.—Jun. Asst. M.O. £350.

Gloucester, Gloucestershire Royal Infirmary, &c.—Hon. Anæsthetist.

Hampstead General and North-west London Hospital, Haverstock-hill, N.W.—H.S. At rate of £100.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hove Hospital.—Res. M.O. £200.

Hull Royal Infirmary.—Asst. Pathologist. 10 gns. per week.

Italian Hospital, Queen-square, W.C.—Hon. Asst. Anæsthetist.

Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.

Leeds Hospital for Women.—H.S. At rate of £100.

Liverpool, County Mental Hospital, Rainhill.—Asst. M.O. £500.

London County Council.—Temporary District M.O.'s. At rate of £156 and £150.

Lowestoft, St. Luke's Hospital.—Sen. Asst. M.O. £500.

Manchester City Education Committee.—Asst. School M.O. £600.

Manchester, Royal Children's Hospital.—Asst. M.O. for Out-patients' Dept. At rate of £150.

Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.

Medway Institution Hospital, Kent.—Res. Asst. M.O. £250.

Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.

Monmouthshire County Council.—Asst. M.O. £500.

Nottingham, Harlow Wood Orthopædic Hospital.—Asst. to the Surgeon in Charge. £450.

Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—Hon. Asst. Surg. to Nose, Throat, and Ear Dept.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstetric Surgeon to Out-patients.

Radium Institute, Riding House-street, W.—H.S. At rate of £150.

Reading, Royal Berkshire Hospital.—Res. Anæsthetist. £150.

Rotherham Hospital.—H.P. £180.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. [illegible]

Roy [illegible] *ay, N.*—H.S. At rate of £70.

St. [illegible] *on, E.C.*—Asst. Phys.

St. [illegible] *S.E.*—Hon. Anæsthetist.

St. [illegible] Supt. £400.

St. [illegible] *and Children, Plaistow, E.*—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.

Scarborough Hospital and Dispensary.—Two H.S.'s. Each at rate of £175.

South Shields, Harton Hospital.—H.S. At rate of £150.

Taunton and Somerset Hospital.—H.S. £100.

Torquay, Torbay Hospital.—H.S. £175.

Uxbridge, Hillingdon County Hospital.—Chief Asst. Radiographer. £225.

Violet Melchett Infant Welfare Centre, &c., Wellington-street, Chelsea.—M.O. £50.

West London Hospital, Hammersmith-road, W.—Hon. Anæsthetist. Also Dermatologist and Physician.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. Res. H.S. and Jun. H.S. At rate of £150 and £100 respectively.

Westminster Hospital, Broad Sanctuary, S.W.—Jun. Asst. Pathologist. At rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Lymm (Chester).

Births, Marriages, and Deaths

MARRIAGES

JACKSON—HALLINAN.—On Oct. 1st, at the Church of the Holy Cross, Catford, William Eric Jackson, LL.B., Barrister-at-Law, to Eileen Hallinan, M.R.C.S., L.R.C.P., younger daughter of the late J. T. Hallinan, J.P., and Mrs. Hallinan, of Canadian-avenue, Catford.

MILLIS—OSBORNE.—On Sept. 29th, at Christ Church, Rathgar, Dublin. Grosvenor Charles Millis, M.C., M.A., M.B., M.R.C.P., to Ruth Henderson, second daughter of the Rev. Dr. Osborne and Mrs. Osborne, of Fairfield House, Rathgar, Dublin.

RUTHERFURD—JACKSON.—At Kilmacolm Old Kirk, on Sept. 21st 1932, by the Rev. Foster Franklin, M.A., and the Rev. John W. Coutts, M.A., Richard Napier Rutherfurd, B.Sc., A.M.I.C.E., son of the late Henry Rutherfurd, M.A., M.B., C.M., and Mrs. Rutherfurd, 20, Bute-gardens, Glasgow, to Elinor Drinkwater Jackson, F.R.C.S. Edin., elder daughter of Mr. and Mrs. S. Douglas Jackson, Shenvalla, Kilmacolm.

STEWART—PULMAN.—On Sept. 28th, at St. Philip's Church, Girlington, Bradford, Henry Hamilton Stewart, M.A., F.R.C.S., to Edna Mary, elder daughter of Mr. and Mrs. Harold H. Pulman, of Hazel Mount, Chellow Dean, Bradford.

DEATHS

LILLEY.—On Sept. 29th, Frederic Graham Lilley, L.D.S. R.C.S. Eng., aged 30 years.

STIRLING.—On Oct. 1st, at The Lindens, Victoria Park, Manchester, William Stirling, LL.D., D.Sc., M.D., late Brackenbury Professor of Physiology, Victoria University, Manchester, in his 82nd year.

WARLIKER.—On Sept. 27th, at a nursing-home, after a short illness, Lieut.-Colonel D. P. Warliker (retired), I.M.S., of Wessex Way, Golders Green.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE MEDICAL QUARTER[1]

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[1] Round about Harley-street. By Dr. Cyril Bryan. London: John Bale, Sons and Danielsson, Ltd. 1932. Pp. 240. 5*s.*

ADDRESSES AND ORIGINAL ARTICLES

THE ESTABLISHMENT OF IMMUNITY IN SOME INFECTIOUS FEVERS*

BY SIR JOHN BROADBENT, BART., M.D. OXF., F.R.C.P. LOND.

CONSULTING PHYSICIAN TO ST. MARY'S HOSPITAL, AND PHYSICIAN TO THE LONDON FEVER HOSPITAL

I MUST first of all thank you for the honour you have done me in electing me your President. It is just 41 years since my father held the same distinguished position, and I am proud that something of his mantle should have fallen on me, though I am conscious how unworthy a successor I am.

I have chosen for my address the treatment of infectious fevers, as for over 25 years I have been on the staff of the London Fever Hospital.

Diphtheria

In 1893, when I was house physician at St. Mary's Hospital, it fell to my lot to have to perform 20 out of 46 tracheotomies on young children admitted to the isolation ward for urgent laryngeal diphtheria. Of the 46 cases 31 died, a mortality of over 62 per cent., and no child under 3 recovered. Early in the following year my brother had a severe attack of diphtheria which nearly proved fatal, followed by extensive paralysis which laid him up for over three months. In those days the only treatment for diphtheria was swabbing the throat with some strong antiseptic which had little or no effect in arresting the growth of the bacillus, so that the mortality was high, and complications were very common. I will outline the revolutions in treatment briefly, not discussing them, but dwelling only on the results.

Klebs, in 1875, described the diphtheria bacillus, which he isolated from the membrane on affected throats. It was cultured and identified as the organism responsible for diphtheria by Löffler in 1884. In 1890 Behring discovered that the serum of horses immunised against diphtheria neutralised the diphtheria toxin, and when injected into guinea-pigs conferred protection upon them. In 1894 Roux, working at the Pasteur Institute, demonstrated the value of this specific antitoxin for purposes of treatment in human beings. In September of that year, together with Martin, he published an epoch-making paper in the *Annales de l'Institut Pasteur*, describing the successful results obtain by treatment of 300 children suffering from diphtheria by injecting antitoxin, the mortality being reduced by nearly 50 per cent. From 1895 onwards the use of antitoxin became general, and the following statistical table taken from the report of the Metropolitan Asylums Board for 1929 is an example of the great decrease in mortality from diphtheria which resulted in this country and throughout the world from the employment of antitoxin.

M.A.B. Statistics: Diphtheria Mortality

Year.	Admissions.	Mortality per 100 of patients treated.	
1885–1889	821	39 1	Before use of antitoxin.
1890–1894	10,777	29 8	
1895–1899	29,058	17·0	
1900–1904	31,819	10 8	
1927	9,155	4 0	
1928	8,981	3 7	

It has been found essential that the antitoxin should be given as soon as possible, and if administered within the first 24 hours in sufficient doses there should be little risk of death for the patient. The later the serum is given, the less its efficacy. The following table compiled by Dr. J. D. Rolleston from a series of 1500 cases of diphtheria treated by antitoxin is quoted in his book "The Acute Infectious Diseases."

Antitoxin administered.	Total of cases.	Deaths.	Mortality per 100.
1st day	62	0	0
2nd day	324	10	3·08
3rd day	391	24	6·1
4th day	309	33	10·6
5th day and later	414	49	11·5

In 1913 the skin reaction test indicative of whether or no the subject is immune to diphtheria was discovered by Schick. This consists of injecting intradermally a small measured dose of diphtheria toxin diluted with normal saline. If the subject is not immune a positive reaction occurs within 24 hours which consists of a circumscribed area of redness with some infiltration of the skin. This becomes more intensive in four to five days, leaving a brownish pigmentation as it fades. A negative reaction shows that the patient is not susceptible to diphtheria.

The next question which arose was the immunisation against diphtheria of susceptible subjects. It was realised that passive immunity could be conferred by injection of antitoxin, and this is done sometimes to protect children in hospital exposed to infection from an outbreak of diphtheria in a ward. But the immunity so conferred is transient, and I have known children so protected contract diphtheria from another source within six weeks of their discharge from hospital. Active and prolonged immunity can only be conferred by injection of the diphtheria toxin in suitable doses at stated intervals. The administration of the unaltered toxin was found to be dangerous. In 1913 Behring suggested the use of toxin-antitoxin as an immunising agent, the toxin being sufficiently neutralised by antitoxin to antagonise its dangerous properties. The use of toxin-antitoxin as a prophylactic against diphtheria was first adopted on a large scale in 1921, in New York City, by Park and Zingher, who were the pioneers in this work. Toxin-antitoxin as a prophylactic has now been superseded by some preparation of "toxoid." This consists of the diphtheria toxin so modified by treatment with formaldehyde that it loses its toxic properties, but retains its virtue as a powerful antigen. This method of preparation was first described in 1923 by Ramon working at the Pasteur Institute in Paris who gave the name of "anatoxin" to the toxin so modified. Since then "toxoid" or "anatoxin" in some form has been in general use there and in this country. Three preparations are employed: (1) toxoid antitoxin, T.A.M. "toxoid" with a small amount of antitoxin added; (2) "toxoid" alone, M.T.; (3) toxoid antitoxin floccules, T.A.F. This consists of the washed and resuspended precipitate which forms when "toxoid" and antitoxin are mixed. The advantages of "toxoid" over toxin-antitoxin are four: it is 20 to 30 times more powerful as an antigen; it contains no serum so there is no risk of sensitisation; it is more stable; and it produces little local or general reaction. T.A.F. is considered to be the most efficient preparation, producing the least local reaction.

In considering prophylaxis against diphtheria we may divide the subjects into three groups: the nurses and staff of fever hospitals; the inmates of large institutions and schools where outbreaks of

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* The presidential address delivered at the annual general meeting of the Medical Society of London on Oct. 10th.

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towns throughout America from 1922–26 onwards. In 1921 Park and Zingher immunised 52,000 school-children in New York, using toxin-antitoxin, and by the end of 1923 out of 180,000 children in the city, half were known to be Schick-negative or to have received injections of toxin-antitoxin. Diphtheria mortality and case-incidence steadily declined till 1927, when there was a very severe epidemic of diphtheria and the numbers again rose very considerably. After this disappointing result a diphtheria preventive committee was formed in 1929, and during that year 212,000 immunisations were carried out in New York City, particular attention being paid to the immunisation of young children, and especially of infants 1 year old. As a result of this active campaign in 1930 the mortality had fallen 70 per cent. and the case-incidence 65 per cent. In Philadelphia, with a population of over 2,000,000, by 1929 364,000 children had been immunised, and in 1930 efforts were made to secure immunisation of all susceptible children, and the attack-rate had fallen to the low level of 0·4 per 1000, so that no hospital for diphtheria was required. In Detroit at the end of 1929 153,000 out of 300,000 children were immunised and no case of diphtheria occurred among these, but 1885, or 12·6 per 1000 cases, occurred among the unprotected children. In Chicago, up to 1928, 215,000 children of school and pre-school age had been immunised but, in spite of this, during 1929 the diphtheria mortality and incidence remained high, so in 1930 efforts were made to secure immunisation of 500,000 children during the year. These figures give some idea of the strenuous efforts made to stamp out diphtheria in the large cities in America, and similar steps were taken in other towns throughout the United States.

In Canada diphtheria was for many years one of the chief causes of death in children. Preventive inoculation has been carried out in Ontario since 1920, and throughout the Dominion since 1923–24, and in March, 1929, it was estimated that a total of 500,000 children, or about one-sixth of those under 15, had been immunised. The mortality from diphtheria had fallen from 23·6 per 100,000 in 1921 to 9·4 in 1929, but the attack-rate had not fallen proportionately, though it differed in various provinces. In Ontario, when prophylactic inoculation was general, it fell from 2·0 per 1000 in 1921 to 0·9 per 1000 in 1928, whereas in the province of Quebec, when diphtheria immunisation was not widely practised, it rose from 0·54 per 1000 in 1924 to 1·0 per 1000 in 1929. Energetic measures were then instituted in the latter province in 1929, and immunisation on a wide basis was undertaken and continued in 1930, with satisfactory results. In Hamilton, 120,000 inhabitants, the attack-rate of diphtheria fell from 6·3 per 1000 in 1922 to 0·09 per 1000 in 1927–28, as a result of the immunisation of some 24,000 children between the years 1922–28.

In our own country the first immunisation centre was opened in Holborn in 1922, and during the next four years about 1000 children were Schick-tested and 600 immunised. No further action was taken by other borough councils till 1926, when clinics were opened at Westminster and Camberwell. Since then there has been a gradual and progressive increase in the number of preventive clinics opened in London and throughout the country. In spite of this the total number of Schick-tested in the whole of Great Britain in 1930, according to Dr. Graham Forbes, only amounted to 149,222, the number of inoculated to 129,146, the total number of "protected" (including Schick-negatives) 198,306, a protection-rate of 4·4 per 1000 as compared with 1·2 per 1000 in 1926. In view of these small numbers, it is not surprising that the attack-rate of diphtheria has not fallen in this country.

Most of the statistics quoted have been taken from Graham Forbes's remarkable book on "Diphtheria, its Distribution and Prevention," to which I wish to acknowledge my indebtedness. All the evidence goes to prove that immunisation of the community is a practical proposition. For its success it is essential that preventive inoculation of children should not be delayed till the school age, but that it should be undertaken when they are from 1 to 4 years old, and that a large proportion, two-thirds or more, of the child population should be immunised. Toxoid in some form is an absolutely safe and satisfactory antigen; it should be given in sufficient doses at stated intervals, and a Schick test should be done some two to four months after inoculation to detect those who have not been satisfactorily immunised. The experience of America, Canada, France, and other countries is that preventive inoculation greatly diminishes both the morbidity of and mortality from diphtheria in large towns where the disease is endemic. This country lags far behind the rest of the world in the adoption of preventive measures against diphtheria, in spite of the effort of local health authorities, and it is time that a widespread campaign against this disease should be inaugurated. For its successful issue, as pointed out in a stimulating and instructive leading article in THE LANCET (May 14th, 1932), "there must be effective propaganda and coördinated effort, in order that the public may realise that at the cost of, at most, trifling discomfort to its children, the nation may rid itself of diphtheria with all the suffering, mortality, and expense which the endemicity of this disease entails."

Scarlet Fever

Many years elapsed after the identification of the diphtheria bacillus before anything definite was discovered as to the organism responsible for scarlet fever. The history of the steps of this discovery makes a fascinating story. Klein in 1887 suggested that streptococci were the ætiological factors in scarlet fever, but this view was discredited, and no further addition to our knowledge was made till George and Gladys Dick took up the investigation of the disease, and conclusively demonstrated that hæmolytic streptococci were the cause of scarlet fever. Their first efforts in 1921 were not successful. They inoculated the throats of 30 volunteers with cultures of strains of hæmolytic streptococci from the throats of patients suffering from scarlet fever. The only result was to produce a "sore-throat," and in no instance was there a rash or any characteristic evidence of scarlet fever. Their conclusions were: "The 30 streptococcus throat inoculation experiments constitute a series large enough to discourage further experiments of the same kind with hæmolytic streptococci."

In spite of this they were not downhearted but continued their researches, and in 1923 they had their first success. They took some pus from a whitlow on the finger of a nurse suffering from scarlet fever, and from cultures grown on sheep's blood and agar plates they isolated hæmolytic streptococci. They swabbed the throats of five volunteers with the streptococci they had grown. One developed typical scarlet fever, two sore-throats only, and three were negative. In a second experiment they repeated the process, using the filtrate instead of the culture with negative results on five volunteers. They again diphtheria are liable to occur; and the general public. As regards the first group, for some time past it has been customary to apply the Schick to them, and to immunise all the positives as far as is possible. Figures from Dr. J. Graham Forbes's "Diphtheria, its Distribution and Prevention," show that in the London fever hospitals up to 1931 over 8000 nurses and members of the staffs had been Schick-tested, of whom 2000 were Schick-positive and of these, 1530 had been immunised. As an instance of successful immunisation carried out at an individual fever hospital, we may take that of the City Fever Hospital, Colinton, Mains, Edinburgh. From 1922 to 1931 600 nurses and staff were Schick-tested. Of these, 380 were Schick-positive and 366 of this number were fully immunised. The yearly average number of the staff who contracted diphtheria previous to 1922 was 13 to 14. By 1930 this had fallen to four, an incidence of 2·6 per cent. During the three years 1928, 1929, and 1930, 18 of the staff contracted diphtheria. Of these, five had only just completed the immunisation course, six were Schick-positive six months after inoculation. There were only seven nurses during this period who were Schick-negative, and whose immunity was not sufficient to resist repeated and massive doses of infection where diphtheria admissions were very high. These had mild attacks and recovered.

At the London Fever Hospital the toxin and antitoxin floccules are employed for immunisation and a preliminary dose of 0·25 c.cm. is given. If no marked reaction occurs 1 c.cm. is given on the following day and three weeks later a final dose of 1 c.cm. After a month's interval another Schick test is done. If this is still positive a second course of immunisation is carried out. Since 1926, when immunisation was instituted, 213 nurses have been tested. Of these, 96 were Schick-positive, 81 became immune after one course of T.A.F., 15 required two courses. In 1927 five cases of clinical diphtheria occurred, due to an outbreak of diphtheria in a scarlet fever ward, in nurses who had not yet been immunised against diphtheria. There were also three cases of follicular tonsillitis with a positive throat swab. In 1928 one case of clinical diphtheria occurred in a nurse who had finished the immunisation course two months before. In 1929 a remarkable case occurred in a nurse who had been nursing diphtheria for eight years. She had not been actively immunised, but was Schick-negative and the blood antitoxin was 1/5th of a unit per c.cm., whereas 1/30th of a unit is considered sufficient for protection. She was nursing a case of severe laryngeal diphtheria when she developed typical membranes on one tonsil with virulent organisms. She made a good recovery.

Active immunisation of the staffs of fever hospitals in Great Britain, as throughout the world, has been attended with most satisfactory results, and the value of the Schick test as a test of susceptibility has been amply demonstrated.

Coming to the second group, the active immunisation in schools and large residential institutions is not a general practice, and the question is, as a rule, only raised when recurrent outbreaks of diphtheria take place. The preventive measures carried out on an outbreak of diphtheria usually consist of removal of the case affected, isolation of contacts when practicable, and swabbing the throats and noses of all contacts with a view to detecting "carriers."

The diphtheria bacillus may be found in the throat or nose of healthy persons, "carriers," under the following conditions: it may persist in the throat of a patient convalescent from diphtheria; it may be found in the throat or nose of healthy persons in contact with the disease; it may be found in the throat of persons not known to have been in contact with diphtheria. The control of infection by swabbing throats of contacts, involving extensive bacteriological investigations and isolation of carriers is costly and frequently ineffective, as temporary disappearance of the organism from the throat or nose, or careless swabbing may fail to detect the carrier. All who have had to deal with outbreaks of diphtheria in hospital, schools, and large residential institutions will know how difficult it is to stamp out the infection, as case after case will occur at irregular intervals, in spite of all precautions, endless swabbing of throats, and isolation of detected carriers. Prolonged isolation of carriers when detected, moreover, is very costly, and up to the present no treatment except removal of tonsils in throat carriers has been found to be efficacious, and no satisfactory treatment of nasal carriers has yet been evolved. The least costly and the only effective procedure in dealing with such repeated outbreaks is to employ the Schick test on all the inmates, and not merely the contacts, and to actively immunise all those who are found to be Schick-positive. A striking illustration of the remarkable success from such prophylactic measures is the result obtained by Surgeon-Captain S. F. Dudley[1] at the Royal Hospital School, Greenwich. At this school over 100 cases of diphtheria occurred among the boys in 1921. As a result of precautions, search for carriers and their segregation, the number of cases fell to two during 1923–24. So far, so good, but in the years of diphtheria prevalence 1925–6–7 there were 42, 67, and 46 cases respectively. Surgeon-Captain Dudley then decided on general immunisation of all susceptible boys. From February, 1928, onwards all boys were Schick tested, and those who were Schick-positive were immunised. Toxoid and toxoid antitoxin floccules T.A.F. given in two injections at a month's interval were employed at first, and later T.A.F. only given in three injections at a fortnight's interval between each, as this was found to be the most satisfactory antigen. Another Schick test was done after two to six months interval and those who still remained Schick-positive were given another course. As a result of this intensive campaign, only two cases of diphtheria occurred in 1928, both of these in boys who contracted it before immunisation. The only case that has occurred since up to 1931 was in a boy who required five doses of toxoid before he became Schick-negative and, in spite of this, contracted diphtheria six months later.

Our third group was the community. If preventive measures are undertaken to stamp out diphtheria in large towns or districts, it is essential for their success that a large proportion of the most susceptible subjects —namely, children—should be immunised and that immunisation should be undertaken at an early age. Children as a rule are born with a passive immunity against diphtheria which persists for some time. It is a curious experience to see a mother suffering from diphtheria suckling a young baby and to realise that no precautions need be taken for the infant's safety. Investigations to determine when the immunity ceases suggest that the child becomes susceptible at three months, though in some cases the immunity appears to last rather longer.

America and Canada were far ahead of this country in instituting general prophylactic measures against diphtheria. Preventive measures on a large scale have been carried out in most of the States and large groups by serological methods, the remainder being of the "heterogeneous type." In view of the large percentage of inagglutinable hæmolytic streptococci in the latter group, they concluded that it is not possible accurately to correlate the type of streptococcus with the clinical type of scarlet fever. Since 1926 they have treated 670 cases of scarlet fever with scarlatinal antitoxic serum with beneficial results. The temperature fell to normal in 60 per cent. of cases, and there was a rapid improvement in the general condition and that of the throat. They also found that it reduced the number of complications. They came to the conclusion that the results of routine treatment of scarlet fever by scarlatinal antitoxin were good, though not to be compared with those obtained by the use of antitoxin in diphtheria. In common with all who have to do with fever hospitals, they found that there is a considerable proportion of Dick-positive reactors in convalescent scarlet fever patients, and they consider that the number is greater in those treated with antitoxin.

After these devastating criticisms by bacteriologists of the hæmolytic streptococcus responsible for scarlet fever, it is a relief to turn to the successful results obtained, despite all obstacles, by the Dicks themselves and other clinicians who have profited by the discoveries made. The Dicks stated in 1929 [6] that since 1923, when they discovered the skin test of susceptibility to scarlet fever, they have made tests on 32,400 persons. Of these 20,856 gave negative reactions. 11,584 persons with positive reactions were immunised, and no case of scarlet fever occurred among these, though they resided in institutions where outbreaks of scarlet fever occurred from time to time. They also immunised 1191 nurses and residents in fever hospitals, and none of these contracted scarlet fever. Controls were furnished by 37 cases which occurred in persons who had not been immunised. Drs. Blatt and Dale [7] have described how they dealt successfully with repeated outbreaks of scarlet fever at a hospital by Dick-testing and immunising the susceptible in the St. Vincent Maternity and Infant Hospital, which provides 170 beds for children under five. Cases of scarlet fever occurred at irregular intervals over a considerable period. Case 1 preceded Cases 2 and 3 by 19 days, Cases 2 and 3 preceded Case 4 by 14 days, Case 4 preceded Case 5 by 16 days, so infection could not have occurred by direct contact. Moreover, some of the cases were on different floors, so it appeared most probable that adult "carriers" having access to more than one floor were the means of transmission. Of a total of 271, including mothers, nurses, and children, 61 were found to be Dick-positive; of these 43 were children: 46 of the Dick-positive were immunised by injections of scarlet fever toxin at five days' intervals. Adults with hæmolytic streptococci in the throat wore special masks till the cultures became negative. The measures taken were successful, no further cases occurred, and it was not found necessary to close the hospital as had been proposed.

For satisfactory results in immunisation in Great Britain I would refer to those obtained by Dr. W. T. Benson, medical superintendent of the City Hospital, Edinburgh.[8] This observer, over a period of the five years, 1923–27, immunised the staff of a fever hospital, with the result that the incidence of scarlet fever among the staff fell from 8·59 per cent. in 1924 to 0·67 per cent. in 1927. In the latter year there were only six cases, of which four developed scarlet fever before immunisation. He gave four injections of the toxin prepared by Dr. R. A. O'Brien at the laboratories of Messrs. Burroughs Wellcome in doses of 500, 1000, 5000, and made 20,000 skin tests over a period of four weeks. As a result of his investigations, he came to the conclusion that the Dick test is a reliable index to susceptibility to scarlet fever. This conclusion was supported, not only by his experiences in respect of immunisation, but by the following: 97 cases wrongly suspected of being cases of scarlet fever were admitted to scarlet fever wards and found to be Dick-negative. None of these contracted scarlet fever. Thirty-six cases exposed to infection, which were Dick-positive, contracted scarlet fever.

At the London Fever Hospital during the last four years 178 nurses have been tested. Of these 113 were Dick-negative and 65 Dick-positive. Of the latter 48 were immunised, 17 left before this was done. No case of scarlet fever has occurred among the nurses who were immunised or who were Dick-negative when tested.

In France Dr. Radoyé,[9] during 1926–27, performed 1367 Dick tests on students in military academies, and immunised 725 who were Dick-positive. As a result, no case of scarlet fever occurred for two years, whereas previously no year had elapsed without an outbreak of the disease. Dr. Hélène Sparrow,[10] in Poland, organised immunisation of children on a large scale in 1925. During the years 1925–27 23,657 children were Dick-tested. The percentage of Dick-positive was 55 to 57, and these were immunised. Dr. C. O. Stallybrass [11] carried out immunisation of Dick-positive subjects in various institutions and orphanages in Liverpool, where outbreaks of scarlet fever kept recurring, with the result that no further cases developed. The above instances, which could be multiplied, demonstrate the successful results which have been obtained by prophylactic inoculation against scarlet fever.

Antitoxin.—As regards the antitoxin, which has been extensively employed both in this country and throughout the world, all those who have made use of it agree that usually it produces a rapid fall of temperature and greatly alleviates the local and constitutional symptoms, but opinion varies as to its efficacy in preventing complications. Drs. Burton and Balmain have had favourable experience of its use. The Dicks, as a result of their observations, find that mastoiditis occurs three times as frequently, and nephritis four times more frequently in controls than in those treated with antitoxin. Dr. Taketo Tsuda has reported that between January, 1929, and March, 1930, he treated every case of scarlet fever with serum (40 c.cm.). As the result of his observations he came to the conclusion that if given in the first 24 hours in sufficient doses it ensures *a cure and prevents complications.* The later it is given the less its efficacy in regard to prevention of complications; if given later than 72 hours after the onset of the attack it is useless. Drs. Friedemann and Deicher treated a number of cases of children in Berlin with antitoxin. They found that a rapid fall of temperature with amelioration of symptoms and early disappearance of the rash resulted. As regards complications, it only appeared to be of value in preventing suppurative lesions, but no difference was noted in respect of incidence of nephritis and adenitis. My own experience at the London Fever Hospital is that it causes a rapid amelioration of local and constitutional symptoms, that so-called "scarlatinal rheumatism" occurs much less frequently as a complication since the use of antitoxin, but I have been disappointed used an unfiltered culture for their experiment, and of four volunteers one developed scarlet fever and two sore-throats. They then came to the conclusion that scarlet fever was caused by a hæmolytic streptococcus or some unrecognised organism closely associated with it in cultures. Early in 1924 they demonstrated that the filtrate of the culture of hæmolytic streptococci which produced experimental scarlet fever gave a positive reaction when injected intradermally in a large percentage of persons who had not had scarlet fever, but no result in patients convalescent from scarlet fever. The positive reaction consists of a small circumscribed erythematous area which appears in four to six hours after the intradermal injection of 0·1 c.cm. scarlatinal toxin, diluted to 1 in 1000. This reaches its maximum in 18 to 36 hours and then fades, leaving some pigmentation or desquamation. This was the origin of the "Dick test." Experimenting further, the Dicks found that injection of serum from patients convalescent from scarlet fever into a Dick-positive subject neutralised the toxin and caused a Dick-negative reaction in a subsequent test. This suggested to them that the toxin might be utilised to produce active immunity, and they proceeded to inject a Dick-positive subject with doses of the toxin. Too large a dose was employed at first, which produced severe local and general reaction, vomiting, pyrexia, and a slight scarlet rash; subsequently the patient became Dick-negative. When used in suitable dilution in repeated doses the reaction was slight, and the patient became Dick-negative.

A. R. Dochez and L. Sherman [2] in the same year confirmed the results of the Dicks, and tried unsuccessfully to produce scarlet fever in various animals. Further, they immunised a horse by a series of injections of the scarlet fever toxin extending over six months. They obtained from the horse a serum which blanched a scarlet fever rash when injected intradermally, and, when injected subcutaneously in sufficient doses into a patient suffering from scarlet fever, caused a rapid fall of temperature and disappearance of the rash, the Dick-positive reaction becoming negative. In 1918 it had been shown that blanching of the scarlet fever rash took place locally when serum from a convalescent scarlet fever patient was injected intradermally. In the light of these discoveries it seemed that the Dick test was exactly analogous to the Schick test in diphtheria, and that it would be a simple matter to produce active immunity to scarlet fever by injection of suitable doses of the toxin at stated intervals, and to neutralise the ill-effects of the toxin in a patient suffering from scarlet fever by antitoxin, as in diphtheria. To a certain extent these hopes have been fulfilled, but the conditions are different. It is impossible to standardise the scarlatinal toxin or antitoxin, since no suitable animal for experimental purposes has yet been discovered except man, and he does not readily offer himself as a subject except perhaps in America to oblige the Dicks.

Prof. C. C. Okell,[3] in the Milroy lectures of the Royal College of Physicians of London for 1932, on the rôle of hæmolytic streptococci in infective disease, raises the question as to the specificity of the scarlet fever organism. He points out that there are two main views held as to the relationship of streptococci to disease. "The first, that each well-defined clinical entity is associated with a special kind of streptococcus, the 'specificity' view expressed in the use of such names as *S. scarlatinæ*, *S. erysipelatis*, &c. The second view is that different diseases due to the hæmolytic streptococcus are due essentially to one species. According to this view, factors of varying virulence and toxicity on one side and varying susceptibility on the other are held to account for the different streptococcal diseases outwardly so unlike." This he terms the "unitarian" view, and in his interesting and suggestive lectures he supports it. He ascribes to the hæmolytic streptococcal exotoxin these important offensive weapons: (1) An erythrogenic or rash-producing toxin, immunologically identical, from whatever source the strain is derived. For this a neutralising serum is available under the name of "scarlatinal antitoxin." (2) A pyogenic property, common to all hæmolytic streptococci to which no antibody has yet been discovered. (3) An invasive property or power to pass the local defences and infect the blood. These three elements, in the attack of the hæmolytic streptococcus, he states, vary in intensity, as does also the strength of the host's defence. Hence the great variation in the clinical and pathological manifestations when man is subjected to the attack of the hæmolytic streptococcus. In further support of his "unitarian" theory, Okell refers to epidemics in which scarlet fever or simple sore-throats are propagated indifferently, and suggests that in these instances the streptococcus, at first non-scarlatinal, has exalted its toxigenicity by passage from individual to individual till it arrives at a phase when it can produce scarlet fever in a Dick-positive individual.

Dr. Alison Glover and Dr. F. Griffith, writing on "Acute Tonsillitis and some of its Sequels"[4] as a result of investigations on epidemics of sore-throat and scarlet fever in a number of schools, found that cases of tonsillitis without rash occur in scarlet fever epidemics side by side with scarlet fever cases. But their conclusions, which are as follows, do not quite match with those of Prof. Okell: (1) Epidemic tonsillitis is due to a hæmolytic streptococcus. (2) Invasion of the throat by a hæmolytic streptococcus may produce: symptomless infection in a healthy carrier, tonsillitis, fever and pharyngitis, or scarlet fever; and any of the three latter may be followed by otitis media or rheumatism. They also conclude that many serological types of hæmolytic streptococci may cause scarlet fever, but four chief types predominate which are responsible for about 70 per cent. of cases. The remaining 30 per cent. are due to strains of a "heterogeneous type" which cannot be classified. Epidemic tonsillitis, they hold, is due to strains from the "heterogeneous group," which may, however, give rise to scarlet fever in susceptible individuals. Griffith, in 1928, had already published a paper in which he differentiated by agglutination methods four separate types of scarlatinal streptococci comprising 70 per cent. of the whole.

Dr. V. D. Allison and Dr. William Gunn, at the Park Hospital, carried out a series of investigations during 1927–28 on over 200 cases of scarlet fever, with a view to determine, if possible, a serological classification of the hæmolytic streptococci responsible for scarlet fever. They found that four different types could be differentiated by agglutination methods comprising about 54 per cent. of the total, and 46 per cent. were "heterogeneous" strains, which possessed no antigens in common with any of the four differentiated types.

Dr. A. R. Balmain and Dr. A. H. G. Burton,[5] during 1928, carried out a series of investigations on 265 cases of scarlet fever: 79 per cent. showed hæmolytic streptococci in the throat; of these, 46·1 per cent. could be classified under one of Griffith's four

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Subcutaneous rupture of the popliteal artery is apparently rare, and no detailed account of the condition seems to be extant in the English language. As far as we can discover four cases only have been recorded since the late war. We feel convinced, however, that the lesion is probably not so rare as the number of recorded cases would lead one to expect. The condition is very serious and any hope of saving the affected limb is entirely dependent upon early diagnosis and treatment. The causes of the injury are varied and numerous, and our purpose of insisting upon the seriousness of the condition can be best served by first describing two typical cases.

TWO CASE RECORDS

Case 1.—A man aged 23, a strong healthy stoker, was playing in a game of football. While so engaged he ran to kick the ball, completely missed it, fell down, and cried out on account of sudden acute pain in his right knee-joint. The knee became very swollen and could not be extended voluntarily. Two hours after the accident the pain in the knee-joint was not so severe but pain in the hip-joint commenced. He was admitted to the Royal Naval Hospital, South Queensferry, on May 19th, 1916, four hours after the accident.

When he was examined on admission the right knee-joint was found to be swollen and the leg cold. The dorsalis pedis artery could not be felt. An X ray examination of the leg did not reveal any fracture. The knee-joint was flexed at an angle of 45 degrees, and any attempt at extension caused him considerable pain. The patient was put to bed, and the right leg supported on a pillow and encased in cotton-wool. The patient passed a very restless night, but next day all pain had disappeared from the limb, except for some intermittent shooting pain in the right hip-joint.

The leg was found to be quite cold and sensation was absent from the foot. The knee was considerably distended and there was some œdema over the tibia. The conclusion that the popliteal artery was lacerated in the region of the knee-joint was arrived at, and it was decided to tie the femoral artery and vein in Hunter's canal, the only treatment which held out any prospect of saving the limb. As the swelling about the knee was relatively very great, exposure of the popliteal artery in the popliteal space was obviously a hopeless procedure.

Under ether anæsthesia the femoral artery and vein were ligatured in Hunter's canal some 20 hours after the injury. When the femoral vessels were exposed, the surrounding tissues were found to be infiltrated with blood and exact differentiation was difficult. The leg was encased with cotton-wool and slung up in a frame. The limb remained cold in spite of the treatment, and no sign of pulsation could be distinguished in the arteries of the leg. Two days later gangrene of the foot commenced and the patient began to complain of acute pain in the leg and toes. Amputation was decided upon and was carried out under open ether anæsthesia. A supracondylar circular amputation was performed. When the popliteal artery was exposed it was found to be ruptured just below the opening in the adductor magnus muscle. There was a large rent in the vein at a lower level. The wound was drained with two large drainage-tubes as the tissues were considerably infiltrated with blood. The amputation stump healed well, and the drainage-tubes were removed on the third day after the operation. The patient was able to leave the hospital three weeks after the operation.

The amputated leg was carefully dissected; the popliteal space was one large hæmatoma and the knee-joint was also full of blood. The posterior ligament of the knee-joint was partly ruptured in its middle third in the regions of the intracondylar notch, but all the other ligaments of the knee, both extra- and intra-articular, were intact. There was no sign of any fracture or disease of the bones or ligaments. The popliteal artery was almost completely ruptured just below the opening in the adductor magnus muscle. There was no sign of disease of the vessel wall and the branches of the artery were all intact. The popliteal vein was ruptured about the middle of the popliteal space and its rupture was complete, the two ends of the vessel being separated, one from the other, by a distance of about half an inch. The tissues in the popliteal space were all infiltrated with blood. A section of the artery was examined microscopically and was reported to be quite normal, there being no sign of disease in the walls of the vessel. A piece of synovial membrane of the knee-joint was also examined microscopically, but it was also found to be quite normal and showed no evidence of disease.

Case 2.—A lad of 15 was cycling along Greenwich-road one day in September, 1927, when the front wheel of his bicycle collided with the edge of a tram-line raised slightly above the level of the road. He was thrown off his bicycle in front of a heavy Foden steam-wagon which he alleged passed over both his legs. This was the patient's story, and he subsequently sued both the L.C.C. tramways and the owners of the wagon for negligence. The case, however, went to the King's Bench Division and was heard before a jury, and it was conclusively agreed that the lad was not run over. The actual mechanism of the injury, however, remained a mystery, despite the investigations of learned counsel, and judgment was given that the unfortunate litigant sustained the lesion as a result of falling from his bicycle, and he consequently lost his case.

When brought into the Miller General Hospital the patient was suffering from some degree of shock. He complained of pain in the region of the left knee, but could move the foot and leg on that side, and apparently experienced no loss of sensation, or numbness, tingling, &c. His left knee was considerably swollen in the region of the joint. There was no bruising and no evidence of the limb having been subjected to any crushing violence. A provisional diagnosis of fracture of the patella with associated traumatic synovitis was made, and the patient was admitted to hospital. A rupture of the popliteal artery was not taken into consideration at this stage, and whether pulsation in the tibial arteries was present or absent was not observed.

On the following day the patient complained of numbness of the foot and toes and tingling in the leg, and it was then noted that pulsation in the tibial arteries was absent. A diagnosis of rupture of the popliteal artery was made by Mr. R. C. B. Ledlie, who decided to operate. The artery was exposed and a large quantity of blood clot was evacuated from the popliteal fossa. No muscle bruising was evident, but the muscles and other soft parts in the region appeared to be infiltrated with blood, the latter having percolated for some distance upwards into the thigh and downwards into the leg. The artery was partially ruptured about half an inch distal to the hiatus in the adductor magnus. The vein was intact; no nerve lesion was detected. The artery was ligatured above and below the rupture, the vein being left unligatured. The wound was then closed and drainage-tubes inserted.

This palliative operation was performed some 30 hours after the accident. The following day, that is, on the third day following the injury, evidence of incipient gangrene began to appear, and amputation was decided upon. This was carried out through the junction of the upper and middle thirds of the femur.

The patient made an uneventful recovery, and was seen about one year later, walking well, with a pylon attachment to the stump.

ÆTIOLOGY

In cases of ruptured popliteal artery associated with gross lesions in the region of the knee—e.g., fractures, dislocations, and those due to a crushing violence, such as occur when the limb is run over—the cause of the rupture is usually obvious. Schultz,[1] in his excellent review of 45 cases, gives an analysis of causes, and in his series there were 11 due to various forms of crushing violence, 11 due to luxation of knee, 5 due to fracture at lower end of femur, and 1 other referred to below. Harrison Cripps[2] records an interesting case in which a man had his leg pushed along in front of a braked wheel, which did not pass over the limb, and remarks that "the mechanism of rupture would appear to be the result of a force acting in an oblique direction, from below upwards, on the lower part of the femur." The artery gave way to find that it does not prevent the occurrence of middle-ear disease and mastoiditis or adenitis, though their incidence is reduced somewhat.

I think you will agree that the successful results obtained in immunisation against scarlet fever are remarkable in view of the impossibility of standardising the toxin or isolating a specific organism. The hæmolytic streptococci appear to be elusive and protean in character, and are responsible for many evils besides scarlet fever and its various complications, and it does not seem possible to sort them out satisfactorily.

I shall say little about the remaining infectious fevers as no recent discoveries have been made in connexion with them.

Measles

The micro-organism for this disease has not yet been isolated. Serum, however, from individuals convalescent from measles has been used successfully for the temporary immunisation of young children exposed to infection. This is of service in preventing the spread of the disease in hospitals and institutions, and for protecting infants and very young children in the case of whom an attack of measles might prove serious. The serum should be given before the sixth day of incubation to be effective.

Whooping-cough

Drs. Bordet and Gengou, working at the Pasteur Institute, isolated the bacillus of whooping-cough in 1906, which they cultured on a special medium of extract of potato and agar-agar with citrated or defibrinated blood. Various authors have confirmed their findings. Drs. Lawson and Mueller[12] isolated the bacillus in 259 out of 1115 cases examined, including 23 cases in the catarrhal stage. They found that there were two effective ways of obtaining cultures: by insulating Bordet-Gengou plates with pellets of sputum expectorated; and by holding a culture plate in front of a patient during a paroxysm of coughing. They claimed that vaccine treatment instituted early in the incubation period would often protect the patient. This, however, is a difficult matter to prove and has not been confirmed. Drs. Saure and Hambrecht[13] claimed that in a series of 200 cases they isolated the organism in 52 out of 53 cases in the catarrhal stage, and in 70 in the paroxysmal stage, but never in the declining stage. They considered that identification of the bacillus in the catarrhal stage was valuable as a means of early diagnosis for purposes of isolation.

Chicken-pox

Nothing definite is known as to the causative organism of chicken-pox, and the only point of interest which arises is that of the association of herpes zoster with chicken-pox.

In 1917 Le Feuvre wrote a paper[14] on "A plea for the common origin of shingles and chicken-pox." He collected 50 cases in which the two conditions were associated, which he classified under three headings: chicken-pox in one individual contracted from contact with shingles in another; shingles contracted from contact with a case of chicken-pox; shingles and chicken-pox occurring together in one individual. Of the 50 cases 41 came under the first heading, 5 under the second, and 4 under the third. The most common occurrence was the development of chicken-pox in a child following contact with shingles in an adult. The incubation period corresponded with that of chicken-pox. Dr. James Taylor[15] referred to Le Feuvre's paper, and quoted cases in which chicken-pox followed contact with herpes, and in a later paper[16] stated that since he had raised the question, several medical men had sent in accounts of similar cases. Personally, I have come across two cases falling under the third heading, in which a well-marked attack of herpes was followed in two or three days by chicken-pox in the same individual. Of course, the association of the two diseases is the exception rather than the rule, but it is interesting to find so many cases on record.

Conclusion

I have endeavoured to trace the great advance in our knowledge of the problems of immunity in connexion with diphtheria and scarlet fever. As regards the former, the success has been such that it would be possible to eradicate the disease from the country by the prophylactic measures now at our command.

As regards scarlet fever, universal immunisation, in the present state of our knowledge, is not a practical proposition, but such success has already been attained in the protection of those exposed to infection in fever hospitals that it may be feasible in the near future. Scarlet fever, however, is not so widespread as diphtheria, and if only a serum can be produced as efficacious in preventing its disastrous complications, as in the case of diphtheria, the need is not so pressing, though an enormous saving of expense to the taxpayers by the abolition of fever hospitals as well as great benefit to the public might be attained by the elimination of diphtheria and scarlet fever.

One word of warning. If these diseases are abolished as the result of what one may term "artificial" immunisation, this must be maintained indefinitely. At the present time natural immunity is to a great extent conferred on the community by droplet infection or mild doses of virus from "carriers" or patients, so that the "herd" are more or less salted. If all Nature's measures for protecting the community are withdrawn, and infection is introduced into an entirely unprotected community, a colossal epidemic might follow.

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NEW SCHEME TO HELP HOSPITALS.—It is stated that the British Charities Association has given its approval to a new scheme for raising money for hospitals, and has expressed a hope that it will be well supported. Manufacturers are being asked to contribute to a central hospital fund one farthi [illegible]
net sales, and it is sugges [illegible]
will be sufficient to solve [illegible]
The manufacturers woul [illegible]
of their goods, which would, where practicable, be marked with the words "Pledged support," and buyers would be asked to give preference to such goods. It is stated that many firms have promised their support to the scheme. It is proposed that a national hospital committee should supply participators with a distinctive emblem which could be used in advertisements.

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Subcutaneous rupture of the popliteal artery is apparently rare, and no detailed account of the condition seems to be extant in the English language. As far as we can discover four cases only have been recorded since the late war. We feel convinced, however, that the lesion is probably not so rare as the number of recorded cases would lead one to expect. The condition is very serious and any hope of saving the affected limb is entirely dependent upon early diagnosis and treatment. The causes of the injury are varied and numerous, and our purpose of insisting upon the seriousness of the condition can be best served by first describing two typical cases.

TWO CASE RECORDS

Case 1.—A man aged 23, a strong healthy stoker, was playing in a game of football. While so engaged he ran to kick the ball, completely missed it, fell down, and cried out on account of sudden acute pain in his right knee-joint. The knee became very swollen and could not be extended voluntarily. Two hours after the accident the pain in the knee-joint was not so severe but pain in the hip-joint commenced. He was admitted to the Royal Naval Hospital, South Queensferry, on May 19th, 1916, four hours after the accident.

When he was examined on admission the right knee-joint was found to be swollen and the leg cold. The dorsalis pedis artery could not be felt. An X ray examination of the leg did not reveal any fracture. The knee-joint was flexed at an angle of 45 degrees, and any attempt at extension caused him considerable pain. The patient was put to bed, and the right leg supported on a pillow and encased in cotton-wool. The patient passed a very restless night, but next day all pain had disappeared from the limb, except for some intermittent shooting pain in the right hip-joint.

The leg was found to be quite cold and sensation was absent from the foot. The knee was considerably distended and there was some œdema over the tibia. The conclusion that the popliteal artery was lacerated in the region of the knee-joint was arrived at, and it was decided to tie the femoral artery and vein in Hunter's canal, the only treatment which held out any prospect of saving the limb. As the swelling about the knee was relatively very great, exposure of the popliteal artery in the popliteal space was obviously a hopeless procedure.

Under ether anæsthesia the femoral artery and vein were ligatured in Hunter's canal some 20 hours after the injury. When the femoral vessels were exposed, the surrounding tissues were found to be infiltrated with blood and exact differentiation was difficult. The leg was encased with cotton-wool and slung up in a frame. The limb remained cold in spite of the treatment, and no sign of pulsation could be distinguished in the arteries of the leg. Two days later gangrene of the foot commenced and the patient began to complain of acute pain in the leg and toes. Amputation was decided upon and was carried out under open ether anæsthesia. A supracondylar circular amputation was performed. When the popliteal artery was exposed it was found to be ruptured just below the opening in the adductor magnus muscle. There was a large rent in the vein at a lower level. The wound was drained with two large drainage-tubes as the tissues were considerably infiltrated with blood. The amputation stump healed well, and the drainage-tubes were removed on the third day after the operation. The patient was able to leave the hospital three weeks after the operation.

The amputated leg was carefully dissected ; the popliteal space was one large hæmatoma and the knee-joint was also full of blood. The posterior ligament of the knee-joint was partly ruptured in its middle third in the regions of the intracondylar notch, but all the other ligaments of the knee, both extra- and intra-articular, were intact. There was no sign of any fracture or disease of the bones or ligaments. The popliteal artery was almost completely ruptured just below the opening in the adductor magnus muscle. There was no sign of disease of the vessel wall and the branches of the artery were all intact. The popliteal vein was ruptured about the middle of the popliteal space and its rupture was complete, the two ends of the vessel being separated, one from the other, by a distance of about half an inch. The tissues in the popliteal space were all infiltrated with blood. A section of the artery was examined microscopically and was reported to be quite normal, there being no sign of disease in the walls of the vessel. A piece of synovial membrane of the knee-joint was also examined microscopically, but it was also found to be quite normal and showed no evidence of disease.

Case 2.—A lad of 15 was cycling along Greenwich-road one day in September, 1927, when the front wheel of his bicycle collided with the edge of a tram-line raised slightly above the level of the road. He was thrown off his bicycle in front of a heavy Foden steam-wagon which he alleged passed over both his legs. This was the patient's story, and he subsequently sued both the L.C.C. tramways and the owners of the wagon for negligence. The case, however, went to the King's Bench Division and was heard before a jury, and it was conclusively agreed that the lad was not run over. The actual mechanism of the injury, however, remained a mystery, despite the investigations of learned counsel, and judgment was given that the unfortunate litigant sustained the lesion as a result of falling from his bicycle, and he consequently lost his case.

When brought into the Miller General Hospital the patient was suffering from some degree of shock. He complained of pain in the region of the left knee, but could move the foot and leg on that side, and apparently experienced no loss of sensation, or numbness, tingling, &c. His left knee was considerably swollen in the region of the joint. There was no bruising and no evidence of the limb having been subjected to any crushing violence. A provisional diagnosis of fracture of the patella with associated traumatic synovitis was made, and the patient was admitted to hospital. A rupture of the popliteal artery was not taken into consideration at this stage, and whether pulsation in the tibial arteries was present or absent was not observed.

On the following day the patient complained of numbness of the foot and toes and tingling in the leg, and it was then noted that pulsation in the tibial arteries was absent. A diagnosis of rupture of the popliteal artery was made by Mr. R. C. B. Ledlie, who decided to operate. The artery was exposed and a large quantity of blood clot was evacuated from the popliteal fossa. No muscle bruising was evident, but the muscles and other soft parts in the region appeared to be infiltrated with blood, the latter having percolated for some distance upwards into the thigh and downwards into the leg. The artery was partially ruptured about half an inch distal to the hiatus in the adductor magnus. The vein was intact ; no nerve lesion was detected. The artery was ligatured above and below the rupture, the vein being left unligatured. The wound was then closed and drainage-tubes inserted.

This palliative operation was performed some 30 hours after the accident. The following day, that is, on the third day following the injury, evidence of incipient gangrene began to appear, and amputation was decided upon. This was carried out through the junction of the upper and middle thirds of the femur.

The patient made an uneventful recovery, and was seen about one year later, walking well, with a pylon attachment to the stump.

ÆTIOLOGY

In cases of ruptured popliteal artery associated with gross lesions in the region of the knee—e.g., fractures, dislocations, and those due to a crushing violence, such as occur when the limb is run over—the cause of the rupture is usually obvious. Schultz,[1] in his excellent review of 45 cases, gives an analysis of causes, and in his series there were 11 due to various forms of crushing violence, 11 due to luxation of knee, 5 due to fracture at lower end of femur, and 1 other referred to below. Harrison Cripps [2] records an interesting case in which a man had his leg pushed along in front of a braked wheel, which did not pass over the limb, and remarks that "the mechanism of rupture would appear to be the result of a force acting in an oblique direction, from below upwards, on the lower part of the femur." The artery gave way to find that it does not prevent the occurrence of middle-ear disease and mastoiditis or adenitis, though their incidence is reduced somewhat.

I think you will agree that the successful results obtained in immunisation against scarlet fever are remarkable in view of the impossibility of standardising the toxin or isolating a specific organism. The hæmolytic streptococci appear to be elusive and protean in character, and are responsible for many evils besides scarlet fever and its various complications, and it does not seem possible to sort them out satisfactorily.

I shall say little about the remaining infectious fevers as no recent discoveries have been made in connexion with them.

Measles

The micro-organism for this disease has not yet been isolated. Serum, however, from individuals convalescent from measles has been used successfully for the temporary immunisation of young children exposed to infection. This is of service in preventing the spread of the disease in hospitals and institutions, and for protecting infants and very young children in the case of whom an attack of measles might prove serious. The serum should be given before the sixth day of incubation to be effective.

Whooping-cough

Drs. Bordet and Gengou, working at the Pasteur Institute, isolated the bacillus of whooping-cough in 1906, which they cultured on a special medium of extract of potato and agar-agar with citrated or defibrinated blood. Various authors have confirmed their findings. Drs. Lawson and Mueller[12] isolated the bacillus in 259 out of 1115 cases examined, including 23 cases in the catarrhal stage. They found that there were two effective ways of obtaining cultures: by insulating Bordet-Gengou plates with pellets of sputum expectorated; and by holding a culture plate in front of a patient during a paroxysm of coughing. They claimed that vaccine treatment instituted early in the incubation period would often protect the patient. This, however, is a difficult matter to prove and has not been confirmed. Drs. Saure and Hambrecht[13] claimed that in a series of 200 cases they isolated the organism in 52 out of 53 cases in the catarrhal stage, and in 70 in the paroxysmal stage, but never in the declining stage. They considered that identification of the bacillus in the catarrhal stage was valuable as a means of early diagnosis for purposes of isolation.

Chicken-pox

Nothing definite is known as to the causative organism of chicken-pox, and the only point of interest which arises is that of the association of herpes zoster with chicken-pox.

In 1917 Le Feuvre wrote a paper[14] on "A plea for the common origin of shingles and chicken-pox." He collected 50 cases in which the two conditions were associated, which he classified under three headings: chicken-pox in one individual contracted from contact with shingles in another; shingles contracted from contact with a case of chicken-pox; shingles and chicken-pox occurring together in one individual. Of the 50 cases 41 came under the first heading, 5 under the second, and 4 under the third. The most common occurrence was the development of chicken-pox in a child following contact with shingles in an adult. The incubation period corresponded with that of chicken-pox. Dr. James Taylor[15] referred to Le Feuvre's paper, and quoted cases in which chicken-pox followed contact with herpes, and in a later paper[16] stated that since he had raised the question, several medical men had sent in accounts of similar cases. Personally, I have come across two cases falling under the third heading, in which a well-marked attack of herpes was followed in two or three days by chicken-pox in the same individual. Of course, the association of the two diseases is the exception rather than the rule, but it is interesting to find so many cases on record.

Conclusion

I have endeavoured to trace the great advance in our knowledge of the problems of immunity in connexion with diphtheria and scarlet fever. As regards the former, the success has been such that it would be possible to eradicate the disease from the country by the prophylactic measures now at our command.

As regards scarlet fever, universal immunisation, in the present state of our knowledge, is not a practical proposition, but such success has already been attained in the protection of those exposed to infection in fever hospitals that it may be feasible in the near future. Scarlet fever, however, is not so widespread as diphtheria, and if only a serum can be produced as efficacious in preventing its disastrous complications, as in the case of diphtheria, the need is not so pressing, though an enormous saving of expense to the taxpayers by the abolition of fever hospitals as well as great benefit to the public might be attained by the elimination of diphtheria and scarlet fever.

One word of warning. If these diseases are abolished as the result of what one may term "artificial" immunisation, this must be maintained indefinitely. At the present time natural immunity is to a great extent conferred on the community by droplet infection or mild doses of virus from "carriers" or patients, so that the "herd" are more or less salted. If all Nature's measures for protecting the community are withdrawn, and infection is introduced into an entirely unprotected community, a colossal epidemic might follow.

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NEW SCHEME TO HELP HOSPITALS.—It is stated that the British Charities Association has given its approval to a new scheme for raising money for hospitals, and has expressed a hope that it will be well supported. Manufacturers are being asked to contribute to a central hospital fund one farthing for every pound sterling of their net sales, and it is suggested that the total sum thus obtained will be sufficient to solve the financial problem of the hospitals. The manufacturers would undertake not to increase the price of their goods, which would, where practicable, be marked with the words "Pledged support," and buyers would be asked to give preference to such goods. It is stated that many firms have promised their support to the scheme. It is proposed that a national hospital committee should supply participators with a distinctive emblem which could be used in advertisements.

from injury to vessels in any part of the body, has only been recorded twice.

From the above account of the very definite signs of rupture of this vessel, one would have thought that diagnosis of the condition should be relatively easy, and it is somewhat surprising to find that in most of the cases recorded, the diagnosis was not definitely established until the onset of gangrene, this usually taking place three or four days after the original injury.

Presumably this is partly due to the fact that the condition is so rare that the possibility of its occurrence does not enter the mind of the practitioner when he first sees the case. Moynihan has referred to the same diagnostic failing in the medical mind in connexion with another rare condition—acute *pancreatitis*—which. he says, is usually missed "because it has not been thought of." Like rupture of the popliteal artery, once the possibility of the lesion is seriously considered on logical lines the diagnosis is a long way towards being established.

Nevertheless, when one or other of the more salient diagnostic features are lacking, as is sometimes the case, the problem is rendered more difficult. For example, in the case recorded by Meyer [6] the most striking sign of pronounced swelling in the popliteal region was absent.

FIG. 1

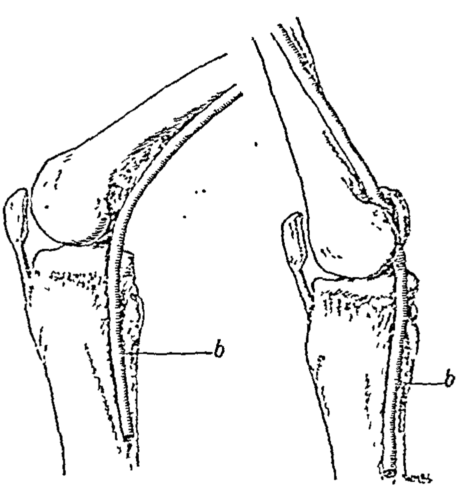

FIG. 2

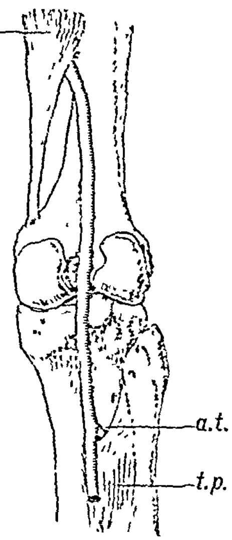

FIG. 1.—The popliteal artery in side view illustrating its relations to the skeleton: A, in slight flexion; B, in hyper-extension (abnormal) of the knee-joint. *b*, terminal bifurcation of the popliteal artery.

FIG. 2.—The popliteal artery from behind, illustrating the structures which are concerned in the fixation of its two extremities. *a.m.*, adductor magnus muscle; *a.t.*, origin of anterior tibial artery; *t.p.*, tibialis posticus muscle.

When the site of lesion was examined after operation only three or four spoonfuls of blood were present in the *Kniekehle*, yet both artery and vein were completely ruptured about 2 cm. distal to the hiatus in the adductor magnus. Both vessels were closed by a thrombus about 2 cm. long. The central end of the artery was very contracted and conical in shape. The injury was thought to be simply a "crushing wound" of the knee region without complications, the coldness and numbness being attributed to pressure on the tibial nerve. Failure of the pulse on the second day was also not regarded as significant and this was also the case in most of the other instances recorded. In a word of counsel Meyer says that in a case of relatively slight injury in the region of the knee where there is numbness and cold feet, always think of rupture of the popliteal artery—but do not forget the possibility of diabetes mellitus.

Billroth [8] describes a case similar to the above, in which the artery was ruptured when the lower end of the femur was fractured by a stone. The skin was insensitive as high as the knee, and the superficial veins were engorged with blood, the diagnosis being established on this latter fact, a point worth recording.

In the case of partial rupture, the diagnosis is often more difficult as pulsation in the more distal vessels is not always absent. The persistence of pulsation and a murmur heard over the fresh hæmatoma may be regarded as diagnostic features of partial rupture.

TREATMENT

In this, as in many other surgical conditions, the prognosis depends largely upon the rapidity with which the diagnosis is established and the proper treatment instituted. It would appear that tying the artery does not prevent the onset of gangrene, and Meyer even goes the length of saying that in the case of *total rupture* of the popliteal artery, it is impossible to save the damaged leg. Schulz states that "a rapid decision to amputate is in the best interest of the patient."

Apart from the empirical occasions for the above statement, it would appear upon consideration of the mechanism of the condition that they are what one would expect.

After the injury bleeding from the vessel soon ceases as a result of various factors. Considerable shock lowers the systemic blood pressure. The muscle wall of the vessel contracts (especially the circular layer after the rupture of the longitudinal clot) and consequently the vessel tends to close and thus diminishes the bleeding. A clot *rapidly forms* at the site of the rupture. Furthermore, the effused blood is limited in its spread by the fat and muscles in the region, and therefore the hæmatoma soon attains its maximum size. All these factors tend to bring about such a rapid equalisation of pressure inside and outside the vessel that the hæmorrhage ceases.

Local operative interference therefore, if undertaken, should not be with a view to tying the vessel primarily, but rather in an attempt to improve local conditions with a view to the facilitation of the establishment of an adequate collateral circulation. The latter is prevented in the limb after the injury by the following factors :—

(*a*) Pressure of the blood clot on the collateral vessels which would normally carry the blood when the main vessel was occluded.

(*b*) Damage to the associated soft parts.

(*c*) Damage to the smaller vessels themselves at the same time as the large artery and due to the same cause.

Factor (*a*) is, of course, most potent in hindering the establishment of efficient collateral circulation, and consequently evacuation of the clot by operation is manifestly a step in the right direction. Factors (*b*) and (*c*) however, are also important in this relation, and can be but little improved by operative interference. Factor (*b*) may be considerable. Poland [9] found the internal head of gastrocnemius torn. In many other cases the nerve was also almost torn through.

In view of the above facts, it is evident that once the condition is diagnosed tight bandaging, which just above the origin of the anterior tibial branch. Pozzi,[3] of Paris, has drawn attention to the frequency of rupture of an artery just above the site of origin of one of its large branches, the latter apparently acting as fixing agents, presumably in a manner similar to that of guy ropes.

When cases in which indirect trauma is the cause are considered, the problem becomes increasingly obscure. Such cases can, however, be classified into two groups—those in which the mechanical explanation offered seems adequate or, at any rate, likely, and those in which any explanation offered must of necessity be largely hypothetical.

The chief interest of the two cases we record above is that they fall into the second category. Adams[4] records a typical case which was accompanied by a slight luxation only of the lower end of the femur backwards, easily reduced by gentle manipulation—yet the artery was completely ruptured. In Schulz's series[1] three cases of rupture were due to forcible extension of a partly flexed knee-joint in which all the soft parts were contracted as a result of previous inflammatory changes in the region. A number of cases are also known in which this disaster has occurred in the course of enthusiastic but misguided "mobilising" of stiff arthritic joints. In all cases, of course, an unhealthy arterio-sclerotic condition of the vessel wall will obviously predispose to rupture.

We now come to the more obscure group of cases in which the rupture of the vessel is in itself the paramount lesion, and there is no evidence of other injury in the region. In connexion with these it will be profitable first to consider some points in the anatomy of the popliteal artery (Fig. 1).

Anatomical relations render this artery peculiarly susceptible to injury either by contusing or by twisting and stretching forces. The vessels in the popliteal space are in intimate relation to bone, more particularly when the knee is fully extended or hyper-extended (abnormally) (Fig. 1, A and B). Proximally the popliteal artery and vein are fixed at the adductor hiatus by the adductor magnus tendinous arch. Distally, at the terminal bifurcation of the popliteal artery, these vessels are anchored to some extent by the tendinous arch of the soleus, but chiefly by the tendinous arch of the tibialis posticus muscle, which together with the interosseous membrane through which it passes fixes the commencement of the anterior tibial artery (Fig. 2). The fact that the artery and vein are intimately associated in a common sheath in this region is also important, the two vessels frequently being ruptured together. Thus the anatomical proximity of the popliteal artery to the posterior surface of the femur and its proximal and distal fixations are the latent anatomical factors which tend to explain its subcutaneous vascular rupture, the result of a severe contusing injury without an associated bone lesion.

In cases where there is no evidence of a contusing force in the region, the above factors also play a part. Our cases quoted above fall into this category, and Mr. J. L. Stretton, of Kidderminster, also tells us of a similar case in his practice. A young lad suffered this injury during a game of football, yet he could not recall having been kicked in the region, nor could any sign of bruising be detected. Presumably, here again, a sudden hyper-extension at the knee-joint was a factor of great importance.

As a rule, the suddenness of the applied violence or movement induces a marked tension and distension of the vessel wall. In the popliteal artery the elastic tissue of the vessel wall offers but little protection against injury from sudden violence. The maximum tensibility of the vessel wall may not be reached, but the vessel, owing to its natural anatomical fixation, is ruptured by the abruptness of the violence to which it is subjected. Lipshutz,[5] who has pointed out some of the facts set out above, compares the mechanism of the vascular wound to a similar sequence of circumstances in the case of a taut piece of string. If the latter be firmly fixed at either end, then a sudden pressure or pull applied to its middle will cause it to give way.

An anomalous tendon, which may act as an additional factor in the fixation of the vessels, has been described in the popliteal region. The tendon has its origin from the short head of the biceps muscle and is inserted in a fan-shaped fashion into the postero-medial aspect of the capsule of the knee-joint, thus forming an additional arch over the vessels. As Lipshutz remarks, it must be admitted that this is an uncommon finding, but on the other hand, rupture of the popliteal artery is also relatively rare.

It will be gathered that the mechanism of rupture must be inferred from the known factors which we are enumerating. Two further points are worthy of consideration.

When the leg is extended to the normal degree the popliteal vessels do not rest against the bony surface, and consequently we can understand why they may be ruptured when the knee is over-extended (as in the case of anterior dislocation of the tibia—vide Fig. 1 B). Also in view of the firm fixation of the vessels anatomically, the rotation which takes place in the final locking of the knee-joint may presumably play some part in producing a torsion of the vessel when the joint is over-extended. This combined twisting and stretching of the vessel would together be very conducive to rupture.

DIAGNOSIS

In almost all cases, immediately or shortly after the injury, the patient complains of extreme pain, and a feeling of distension in the region of the knee (as if the leg felt too small). A swelling appears behind the knee, becomes stony hard, and gradually spreads upwards and downwards from the popliteal region. In some cases, according to Meyer,[6] the leg may swell to two or even three times its normal size. This, of course, is manifestly due to blood percolating downwards between the muscle layers.

Within a few hours the patient complains of a sensation of pins-and-needles first in the leg, then in the foot, and finally in the toes. Gradually, a numbed "dead" feeling is experienced in the foot, and localisation of sensation becomes more and more vague. Eventually, there is loss of all sensation as far as the middle of the leg.

In the case of complete rupture of the vessel, loss of pulsation in the anterior and posterior tibial arteries is an early sign. In cases of partial rupture, weak pulsation is usually still felt in the tibial vessels.

Rarely pulsation may be evident in the popliteal hæmatoma, and in the case of partial rupture, a pulsation murmur may be heard at the site of the lesion. This is said to be diagnostic of partial rupture, but these signs are not of much practical value, as they have only been noted on rare occasions. In 34 recorded cases pulsation was observed twice and a murmur was heard in one case only. Wahl[7] describes a remarkable case of rupture of both artery and vein in which a cross-anastomosis was established between the two vessels. The blood from the proximal part of the popliteal artery passed into the distal part of the severed vein with the result that a sort of reversed circulation was maintained for a time. Such an extraordinary occurrence, resulting recorded and is somewhat difficult to explain. The age at which it appears suggests some relation to the menopause.

The blood pressure curve for the eclamptic group rises much more rapidly after the age of 30, as compared with the control cases; the menopausal drop is exaggerated; there is a rapid rise up to 187 mm. and a slight fall, probably due to elimination, by serious disability or death, of the worst cases, which would have brought up the average still higher.

As there appears to be a difference of opinion as to what is to be regarded as the maximum normal systolic pressure, that indicated by Hill (140) has been accepted. On this basis 42·5 per cent. of eclamptics and 33·72 per cent. of controls have now got hypertension. On the control curve, however, the average systolic pressure rises to a maximum of 150 mm., and if this is taken as a standard, 26·5 per cent. of eclampsia patients and 21·6 per cent. of controls have hypertension. (Table I.)

TABLE I

Blood pressure.		Eclampsia.		Controls.
Over 140	..	40 = 42·5 per cent.	..	74 = 33·72 per cent.
„ 145	..	33 = 35·1 „	..	63 = 28·8 „
„ 150	..	25 = 26·5 „	..	47 = 21·6 „

Whichever standard is accepted a higher percentage of eclampsia cases is found to have hypertension.

The question arises as to whether the blood pressure gets progressively higher in relation to the time which has elapsed since the eclamptic convulsions, and in order to answer this, the average systolic blood pressure has been calculated in all the age-groups, in relation to the time since the attack.

All the age-groups show the same characteristics, such as a high reading in the 0–5 years section; a high jump between the second and third sections, and a low level in the "16 and over" group. This last is probably explained by two factors: (1) in the case of the eclamptics by death of the worst case; (2) in both classes by reluctance on the part of patients suffering from severe disability resulting from high blood pressure to come up for examination. (Table II.)

TABLE II.—*Average Systolic Blood Pressure*

Years since pregnancy.	Age-group.							
	31–35.		36–40.		41–45.		46–50.	
	E.	Ct.	E.	Ct.	E.	Ct.	E.	Ct.
0–5 ..	134	122	149	129	140	137	185	—
6–10 ..	135	141	139	142	—	143	138	158
11–15 ..	—	140	156	146	204	152	189	150
16 and over	126	130	166	128	159	144	133	126

E. = eclampsia; Ct. = control.

From Table II. one concludes that there is a fairly definite indication (after an initial drop) of a rise in blood pressure as time elapses after the attack. The fall in pressure between the fifth and the tenth years after the attack seems to suggest temporary recovery.

An attempt was made to determine whether *further* pregnancies have any effect on subsequent pressure readings. In the case of the controls there is no upward tendency as a result of further pregnancies, including miscarriages. Two groups of the eclamptics show a slight tendency to increase, but in two other groups the observations are indefinite. The early death of the worst cases makes these figures show to advantage, and there is thus a slight indication of rise of pressure with further pregnancies.

Inquiry was made into the relation between the number of fits and the pressure records, but the results were indecisive.

EVIDENCE OF RENAL DAMAGE

Difficulty was experienced in interpreting some of the findings. Where granular casts occurred in the urine of a patient with hypertension, it seemed reasonable to make a diagnosis of chronic nephritis.

Headaches were complained of in 24·4 per cent. of eclamptics and 10·09 per cent. of controls (a proportion of 2·4 : 1).

In 12·7 per cent. of eclamptics and 5·69 per cent. of controls (proportion 2·2 : 1) there was complaint of occasional œdema of the feet.

In the group of eclamptics albumin was present in the urine of six patients (6·38 per cent.). Two women appear to be definite cases of chronic nephritis.

One, aged 55, had eclampsia 16 years ago, in her eighth pregnancy. Two years later she had albuminuria of pregnancy, and was delivered of a stillborn, full-time child. When examined recently she was found to have a blood pressure of 230 mm. She complained of swelling of her ankles and hands; both 0·05 per cent. albumin and granular casts were found in her urine.

The other, a woman of 46, had eclampsia five years ago, in her sixth and last pregnancy. When seen her blood pressure was 240/160, the blood non-protein nitrogen 50 mg., and her urine contained 0·05 per cent. albumin—though no casts were found.

Two other patients, with neither casts nor albuminuria, gave suggestive histories.

The first, aged 38, had eclamptic fits in her first pregnancy, 16 years ago. She was found to have a blood pressure of 188/118, and her blood non-protein nitrogen was 31·4 mg.; she had œdema of the legs and ankles, and has been treated several times since her eclampsia for "kidney trouble."

The other, aged 36, had eclampsia in 1926, when pregnant for the fourth time; she had antepartum hæmorrhage with albuminuria in 1929, and acute nephritis in 1930. When examined, her blood pressure was 200/120, and she complained of œdema of the face and hands. It seems highly probable that the acute nephritis in 1930 was an exacerbation of a chronic condition.

Of the controls, albumin was found in two cases (0·91 per cent.), and in one of these, a woman of 48, the blood pressure was 238/156. This patient had typhoid fever 19 years previously, and according to Thayer,[11] the incidence of arterio-sclerosis is much higher after typhoid fever than in individuals who have not been affected. This may account for the high blood pressure in this case. These observations are set forth in Table III.

TABLE III

	Hyper-tension.	Albuminuria.	Prob. chronic nephritis.
	Per cent.		
Eclampsia ..	35·1	6·38	4·29
Controls ..	28·8	0·91	? Nil.

Two further cases are examples of eclampsia occurring in women with pre-existing chronic nephritis.

One, aged 47, gave a history of having had nephritis at the age of 7. There is no record of her first pregnancy; she had eclampsia in her second, and albuminuria occurred in each of the subsequent five pregnancies. When examined, her blood pressure was 168 mm., but no albumin or casts were found in her urine.

A second, aged 50, who had scarlet fever as a child, was traced through the courtesy of her doctor, but was unable to attend. She was treated for chronic Bright's disease after her second and during her third and fourth pregnancies, which ended prematurely. No information is available about the fifth; she had eclampsia in her sixth pregnancy, ars later, but is still alive.

would obviously embarrass the circulation still further, should be avoided.

The experience of some would seem to warrant local operation if diagnosis is made soon after the injury. The clot should be cleared out and the vessel ligatured. In most cases the vein is also damaged, but should this vessel be intact, it is advisable to ligature it as well, as by this means equilibration of the circulation seems to be brought about more rapidly. Albrot,[10] in 11 cases which he records, claims to have avoided gangrene in 5; Klein,[11] in a case of rupture of both artery and vein, avoided gangrene by ligature of both. If diagnosis is made later the best course to adopt seems to be to await the formation of a line of demarcation of gangrene, and then to perform amputation through the middle third of the thigh. The prognosis of partial rupture is, of course, more favourable, but there appears to be no case recorded in which suture in continuity has been successfully carried out.

We wish to thank Miss Mary Barclay-Smith for her illustrations and Mr. Ledlie for allowing us to report Case 2, which was under his care.

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AN INQUIRY INTO THE

AFTER-EFFECTS OF ECLAMPSIA

WITH SPECIAL REFERENCE TO HYPERTENSION AND CHRONIC NEPHRITIS

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MUCH has lately been written about the after-effects of eclampsia. Most observers have noted the liability to subsequent chronic nephritis, though they differ as to its incidence.

Harris[1] examined 27 women one year after an eclamptic attack and found chronic nephritis in 3. Nevermann[2] found the condition in only 3 out of 60 patients, though 30 others showed various symptoms, such as headache, visual disturbances, hypertension, &c.

Greenhill[3] also traced 60 "post-eclamptics," of whom 2 had died of nephritis, and 3 had this complaint when seen.

Döderlein[4] had only 1 case of hypertension in a series of 26 cases; 3 had slight albuminuria, and 7 albumin and casts.

Sym[5] examined 74 cases and found chronic nephritis in 2; Caldwell and Lyle[6] found nephritis in 8 per cent. of women after eclampsia, while Gibson[7] found the condition in 5 out of 14 patients.

It is difficult to compare results and draw conclusions without having a standard, and it was held desirable to control the results by following-up a number of women who had had eclampsia, and comparing the findings with those in normal parous women of corresponding parity and age.

Method of Inquiry

A review has been made of cases receiving in-patient treatment at the Jessop Hospital for Women, Sheffield, during the years 1908–1928 inclusive. These cases examined have been divided into two groups: (1) eclamptic patients who had definite fits; and (2) normal women as controls.

During the 21 years in question 333 cases of eclampsia were treated, with a mortality of 72 (21·32 per cent.). Of the surviving 261 patients, 10 were unmarried, and no attempt was made to communicate with them. Thus there remained for investigation 251 patients, of whom 94 attended for examination. A further 6 replied but were unable, for various reasons, to attend. Another 15 were not seen, but were traced through the courtesy of their family doctors, who reported on their condition; of these 7 had died. Four further deaths have been traced, making 11 altogether. Thus 132 were untraceable.

The controls were women without toxæmia, but who were as nearly as possible—as regards age, parity, and even method and date of delivery—similar to those of the eclamptic group who had attended for examination. Over 1300 women in this group were written to, and 218 attended. Seven are know to have died.

Method of examination.—Inquiry was made as to the patient's health and further pregnancies since the eclamptic convulsions or normal delivery as the case might be. In all cases both the systolic and diastolic blood pressure readings were taken whilst seated, due precautions being taken to eliminate a rise of blood pressure from emotional causes. The urine was examined, a catheter specimen being taken whenever albumin was found.

Results

Of the 11 eclamptic patients known to have died (at an average age of 34) after discharge from hospital, 1 was transferred to another institution with mania and died nine days later from pneumonia. A second was transferred four weeks after delivery to another hospital, where she died of broncho-pneumonia. Of the remaining 9, 4 died of nephritis, 1 of "dropsy" within four years, and 1 of perforated gastric ulcer. Another died of pneumococcal peritonitis five years later, but, since post-mortem examination revealed small white kidneys, she evidently had chronic nephritis. Two were certified as having died from "heart disease," death occurring respectively one year and seven years after leaving hospital.

Of the controls 7 are known to have died—at the average age of 63; 4 died from conditions in no way referable to renal disease. In the other 3 cases it was impossible to trace the cause of death.

ANALYSIS OF BLOOD PRESSURE READINGS

The average of both the systolic and diastolic blood pressures (at the time of examination) have been calculated for age-groups of five years—i.e., 20–25, 26–30, &c., and are shown in the Figure. Before we compare the results found in the two groups of cases it is necessary to consider the control curves. These show a general upward tendency between the ages of 20 and 60, with a slight, but definite, depression between the ages of 40 and 50. The upward tendency is in agreement with observations which have been made by various observers.

Taylor[8] states that in healthy persons the blood pressure increases from childhood to old age.

Leonard Hill[9] is of the opinion that the normal systolic pressure in healthy young men, measured by the digital method, is 110–130, but he also states[10] that this pressure should be as much as 10 mm. higher as measured by the auditory method, so that pressures up to 140 might presumably be considered normal.

The depression of blood pressure between the ages of 40 and 50 is an observation which one cannot find

The sequence may be represented as follows:—

Recurrence of eclampsia.—Twelve cases, of which two examples are given.

(1) Eclampsia. (2–7) Normal. (8) Eclampsia.
(1–5) Normal. (6) Eclampsia. (7) Eclampsia. (8) Abortion.

Eclampsia starting sequence.—Nine cases, of which two examples are given.

(1) Eclampsia. (2–4) Toxæmia. (5) Abortion. (6) Toxæmia.
(1–3) Normal. (4) Eclampsia. (5) Toxæmia.

Abortion-eclampsia sequence.—Ten cases, of which two examples are given.

(1–3) Normal. (4 and 5) Premature Birth. (6) Abortion. (7) Eclampsia.
(1–4) Normal. (5) Abortion. (6–14) Normal. (15 and 16) Abortions. (17) Eclampsia.

Conclusions

(1) In normal parous women there is a steady rise of blood pressure with increasing age, at any rate up to the age of 60. There is a slight depression between the ages of 40 and 50. After eclampsia the blood pressure rises more rapidly and to greater height. The depression occurs as on the control curve, but is exaggerated, and the readings at the upper end are modified by death of the worst cases. There is a fairly definite indication (after an initial drop) of a rise with advancing time; and a slight indication of a rise of blood pressure with further pregnancies.

(2) Chronic nephritis develops in a number of women after eclampsia, and this, in some cases, is severe enough to cause early death.

(3) There appears to be a direct relation between the age and parity of the patient, and the occurrence of hypertension and nephritis. Both are more liable to occur in multigravidæ who are over 30 at the time of the attack. Both occur more frequently after the antepartum type.

(4) There is no evidence that subsequent conception is rendered less likely by an attack of eclampsia. Fertility is lessened after this condition in that miscarriage and stillbirth occur more frequently than in normal women. Albuminuria is much more likely to complicate subsequent pregnancies after eclampsia than in normal cases.

(5) In a certain number of cases a "toxæmia sequence" occurs. Eclampsia may begin or end the sequence or may itself recur.

I am indebted to the staff of the Jessop Hospital for Women, Sheffield, for permission to use the case records of the hospital. I tender my grateful thanks to Prof. Miles H. Phillips and Mr. W. W. King for valuable assistance and advice, and also to Mr. J. R. Thompson, D.Sc., of the University of Sheffield, who has given me invaluable help with the statistical data available.

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INFLUENCE OF THE SEXUAL CYCLE ON BREAST LESIONS

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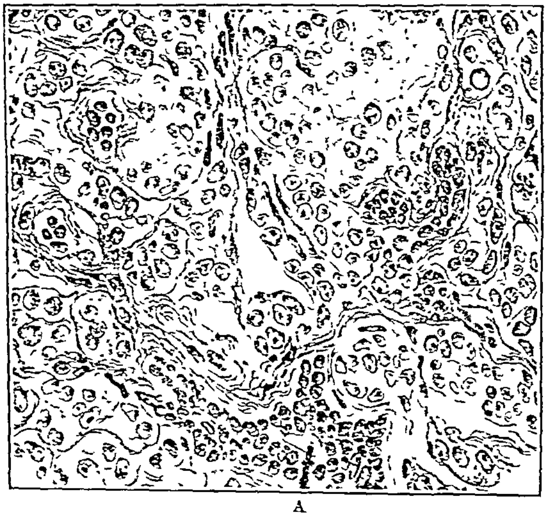
THOUGH a revolution in the interpretation of pathological lesions has followed Rosenberg's[1] discovery of the sexual cycle in the breast, even now the full extent and significance of these changes is sometimes scarcely realised. The proliferation of glandular elements during the premenstrual phase is far more rapid than the growth of a carcinoma. Their post-menstrual regression is equally astonishing; after a few days the only traces of the former lobule are one or two clefts barely visible in the fibrous tissue which has closed in and obliterated the site of the glandular mass. It is easy to see that even a slight upset in the mechanism of periodic growth and involution will have far-reaching consequences.

The most common benign tumour of the breast is known variously as fibro-adenoma, adeno-fibroma, and periductal fibroma. By comparing sections of breast and tumour from a series of cases in which the menstrual date was known it was found that in every one the tumour showed changes parallel to those in the surrounding normal breast. That is to say, in the premenstrual phase, new lobules formed in the tumour, although not as perfectly as in the breast; during menstruation the tumour ducts might be distended with secretion and shed cells; after menstruation many ducts underwent involution; in the interval phase the periductal fibrous tissue was dense and the epithelium had resumed the appearance typical of the resting state. The breast cycle was reflected in the tumour, but not perfectly. Had growth and regression been perfect there would have been no tumour. The tumour existed only because some local upset had marred the regular development

FIG. 1



Aged 33. Carcinomatous lobule from a breast removed 12 days before the onset of a period. The main duct (A) shows slight hyperplasia of the living cells but no cancer. It is surrounded by ductules; their outlines are still visible but in every one the epithelial cells are carcinomatous. This lobule was probably formed during the previous premenstrual phase but did not undergo involution since all its cells became cancerous.

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[1] Frankfurter Zeit. für Path., 1922, xxvii., 466; Virchows Archiv für. Path. Anat., 1926, cclxii., 298.

On reviewing the known causes of death, together with the condition of patients seen, it becomes evident that chronic nephritis is found more frequently after eclampsia than in normal women. It is also clear that albuminuria and hypertension are more commonly found in the former group than in the latter. Christian and O'Hare [12] state that hypertension alone should not be considered evidence of chronic nephritis. After one examination it is frequently impossible to make a diagnosis between renal disease and hyperpiesia—the term applied by Allbutt [13] to hypertension associated with arterio-sclerosis. Arterio-sclerosis is commonly associated with intoxications and infections, and it seems possible that the eclamptic toxæmia may damage the kidneys or the arterial system or both.

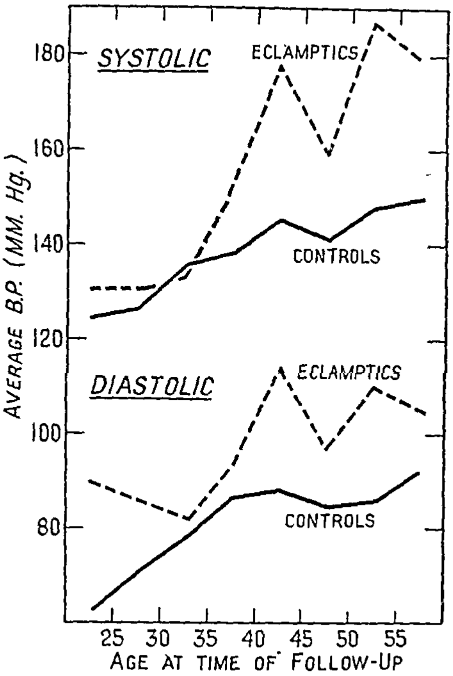

Chart showing the average blood pressure (systolic and diastolic) at various ages in women who have previously had eclampsia and those who have not.

TABLE IV.

Condition on examination	Condition at time of eclampsia.				Type.
	Under 30.	30 and over.	Primip.	Multip.	A.P. Eclamp.
Total —94	66 (70·2 %)	28 (29·8 %)	59 (62·7 %)	35 (37·3 %)	58 (61·7 %)
Nephritis —4	1 (25 %)	3 (75 %)	1 (25 %)	3 (75 %)	4 (100 %)
B.P. 160 and over —18	7 (38·9 %)	11 (61·1 %)	7 (38·9 %)	11 (61·1 %)	14 (77·7 %)
Nephritis at time of death —5	—	5 (100 %)	—	5 (100 %)	5 (100 %)

Peckham [14] has found in his series of cases that nephritis was present one year after an eclamptic attack, in 12·2 per cent. of primiparæ and in 39·3 per cent. of multiparæ. He also found age to be a predisposing factor, nephritis occurring in 11·8 per cent. of cases under 19, in 13·8 per cent. between 20 and 29, in 63·6 per cent. between 30 and 39, and in 66·6 per cent. over 40. Of "mild eclamptics" returning with nephritis, he found all in the antepartum group, while after the "severe type" the nephritics were distributed amongst the ante- and postpartum cases.

The findings discussed in this paper support those of Peckham. Of the five women who have died of nephritis, or who are known to have had it at the time of death, *all* were multigravidæ over 30 at the time of the attack, and in all the eclampsia was of the antepartum type. Of the four patients seen in whom chronic nephritis was diagnosed or suspected, three were multiparæ over 30 when they had eclampsia—which was antepartum in two cases and postpartum in the other two. Though at the time of examination a diagnosis of nephritis was made in only four cases, a further 18 women had a systolic pressure of 160 or over, and of these, 11 were over 30 years of age, and 11 were multiparæ when they had eclampsia, which was antepartum in 13.

These figures are very striking, for of the 94 women seen, 60 were under 30 and 28 were 30 or over when they had eclampsia, while 59 were primiparæ and 35 multiparæ. The antepartum type occurred in 58 (61·7 per cent.). (Table IV.)

SUBSEQUENT FERTILITY

In order to discover what, if any, effect these toxic conditions have on fertility, a careful history was taken of subsequent pregnancies in all cases seen. Pregnancy occurred again in 60·6 per cent. of women after having had eclampsia, and in 56 per cent. of normal women after the control pregnancy. Thus more eclamptics than controls actually became pregnant again.

Though ability to conceive does not appear to be lessened by an attack of eclampsia, miscarriages appeared to be common in this group, and the subsequent pregnancies have, therefore, been analysed. In the eclamptic group, miscarriages occurred in 22·8 per cent. of women, and of the controls in 15·5 per cent. In what proportion of women abortion was procured through fear of a repetition of the toxic condition is not known. (Table V.)

TABLE V

—	Eclampsia.	Control.
	Per cent.	
Reoccurrence of pregnancy	60·6	56·0
Miscarriage	22·8	15·5
Subsequent pregnancy complicated by albuminuria	8·5	0·46
Full-time pregnancy terminating in stillbirth	10·52	4·9

James Young [15] has drawn attention to the "surprising frequency of recurrence of toxæmia in eclamptic cases," and has noticed the existence of what he calls the "abortion-premature birth-toxæmia sequence." By piecing together previous and subsequent histories of all the cases traced, it has been possible to collect a number of cases in which such sequence occurs. Of cases traced a sequence is shown in 31. In 12 of these there is a recurrence of eclampsia, and five patients had normal pregnancies or abortions between the eclamptic attacks. One woman had eclampsia three times. In nine patients eclampsia started the sequence, being followed by abortion or toxæmia, and in six cases being preceded by normal pregnancies, while in the remaining ten cases, the sequence started with an abortion and went on to eclampsia.

(*b*) If only one or two ducts have become carcinomatous then the rest of the lobule undergoes the usual post-menstrual involution. The periductal fibrous tissue closes in. In the cancerous ductules the architecture is lost but the cells remain (Figs. 2 and 3). They remain as a column because of the pressure of the fibrous tissue outside. The column may be one or many depending on the number of ductules involved. Since cancer grows in the line of least resistance the cells are more likely to grow along clefts than in other directions. This accounts for the arrangement of cells in rows so often seen in carcinoma of the breast.

The observations recorded here were made from a study of six breasts from women ranging in age from 31 to 42. In none was the carcinoma complicated by other lesions. It is hoped to make cancer in older women the subject of a separate communication.

ON THE USE OF SANOCRYSIN IN PULMONARY TUBERCULOSIS

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THIS paper is concerned with 153 tuberculous patients, who were treated with sanocrysin in Brompton Hospital during the three years 1926–28. Its publication is justified by the fact that, although the drug has been in clinical use for over seven years, there is yet no consensus of opinion as to its dosage, mode of action, and the type of case in which its use is indicated.

The patients were treated independently by the physicians under whose care they had been admitted. The obvious disadvantages of such separate observation have been more than counterbalanced by the fact that on some points the conclusions reached are similar and have thus received independent corroboration. The usual indication for sanocrysin was in patients not improving with conservative treatment and yet unsuitable for collapse therapy. It was also used in conjunction with artificial pneumothorax, phrenic avulsion, and thoracoplasty.

CLASSIFICATION OF CASES

It has been claimed that sanocrysin is more effective in the recent exudative type of case than in the fibrotic, and in order to investigate this point a fairly elaborate method of classifying the cases was considered essential. Of the available methods, that of Lyle Cummins[1] was adopted. He suggests a primary division of cases into two main types :—

1. Acute and initial (A), when the progress of the illness has been continuous from the start, without healthy intervals of any considerable duration.
2. Chronic and recrudescent (C), when there have been previous signs of tuberculous infection such as hæmoptysis, pleurisy, bone or joint or gland, abdominal or pulmonary infection, but where these have been separated from the present illness by periods of relatively good health. All cases over two years' standing are to be classified under this heading.

He subdivides each of these two main groups into three, using the international classification to denote the degree of lung involvement :—

1. Disease of slight severity limited to a small area of one lobe.
2. Disease of slight severity more extensive than (1), but affecting at most the volume of one lobe. Or disease of greater severity affecting at most the volume of half a lobe.
3. All cases of greater extent than (2), and all cases with considerable excavation.

For general purposes the stage should be assessed in accordance with the obvious clinical signs, but in this investigation the skiagraphic appearances have been taken into consideration, with the idea of obtaining a more accurate and more valuable assessment.

He makes a final subdivision according to the Inman method into (*a*) resting febrile; (*b*) resting afebrile, ambulant febrile; and (*c*) ambulant febrile.

It will be seen that by this method a classification consisting of 18 groups is obtained. The distribution of the 153 cases under discussion is given in Table I.

TABLE I

A1(*a*), A1(*b*), A1(*c*)	No cases.	C1(*a*)	1 case.
A2(*a*)	3 ,,	C1(*b*), C1(*c*), C2(*a*)	No cases.
A2(*b*)	2 ,,	C2(*b*)	1 case.
A2(*c*)	2 ,,	C2(*c*)	2 cases.
A3(*a*)	53 ,,	C3(*a*)	58 ,,
A3(*b*)	5 ,,	C3(*b*)	6 ,,
A3(*c*)	3 ,,	C3(*c*)	17 ,,

DOSAGE

During the early days large doses of sanocrysin were employed. It was usual to give an initial dose of 0·25 g. and end the course with three or more injections of 1 g. (in one case as many as seven injections of 1 g. were given). With added experience, however, it was unanimously found that each case must be considered individually on its merits, and there was a definite tendency to use smaller doses. Thus in 1926, out of 43 patients 22 received 6 g. or over, and of the remaining 21 more than half received 4 g. or over. In 1927 and 1928, out of 110 patients only 7 received 6 g. or over, and of the remaining 103 less than a third received 4 g. or over. Moreover, the first dose was usually only 0·05 or 0·1 g., and latterly it became the exception rather than the rule for final doses to exceed 0·5 or 0·75 g. The aim was to produce a moderate reaction and avoid strong reactions as far as possible. An interval of at least a week was allowed between injections, the total time taken to complete a course of 4 to 6 g. depending entirely on the degree of reaction produced and the subsequent spacing and increase rate of doses.

Two or more courses were given to 12 patients. This procedure appeared sound on theoretical grounds, and the results were encouraging. Ten cases showed improvement, three of them being "much improved." Of these, one showed improvement in symptoms and physical signs and, although a skiagram after the first course suggested an increase of infiltration, another taken after the second course showed marked improvement.

TABLE II

	Cases and per cent.
Temperature :—	
Evening rise (Type 2 of Secher[2]) ..	114 (74)
Delayed rise (Type 3)	2 (1⅓)
Sustained rise (Type 4)	6 (4)
Absence of temperature (Type 5)	31 (20)
Albuminuria	42 (27½)
Skin rashes	31 (20)
Affections of mucous membranes :—	
Conjunctivitis	2 (1⅓)
Metallic taste	18 (12)
Sore tongue	2 (1⅓)
Sore-throat	3 (2)
Stomatitis	3 (2)
Gastro-intestinal symptoms :—	
Vomiting	47 (31)
Diarrhœa	38 (25)
Abdominal pain	21 (13½)
Focal reaction	6 (4)

REACTIONS

The following reactions, similar to those recorded by previous writers, were noted as occurring after sanocrysin treatment (Table II.).

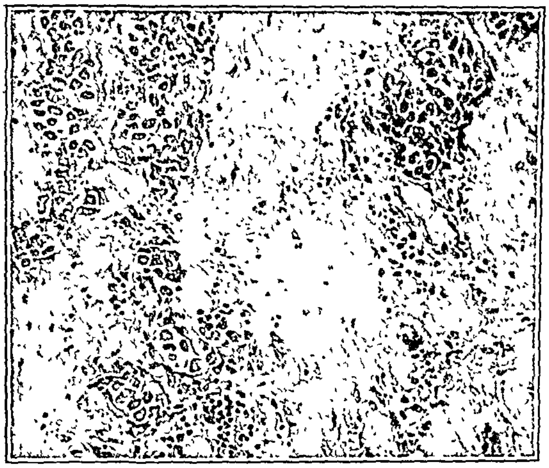
of the cycle. The varied appearances assumed by a fibro-adenoma depend upon which element or elements, epithelium or fibrous tissue, is at fault and in what direction (overgrowth, excessive secretion, defective involution, degeneration, &c.).

Just as fibro-adenoma is *the result of a local irregularity* in development and involution, so the lesion known as "chronic mastitis," or better, mazoplasia,* is the effect of a general irregularity in *the cycle* changes. The condition occurs most commonly in girls about puberty and in women *nearing the menopause, but is found particularly in* association with irregular menstruation in women of *any age. A similar condition can be produced in* rats by upsetting the œstrous cycle.

The lesions in fibro-adenoma and chronic mastitis have a direct relation to cycle changes. But even in carcinoma the sexual cycle cannot be left out of account. In women of the childbearing age it is of the utmost importance in explaining a common mode of spread of the growth and in accounting for some of its morphological appearances.

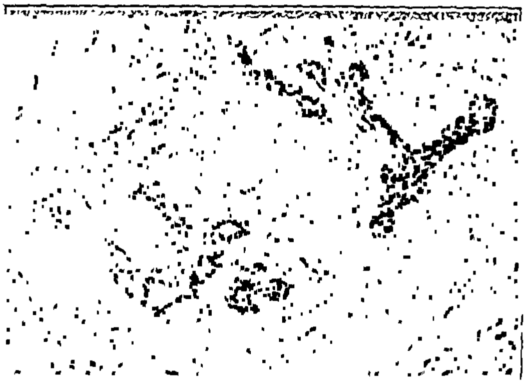
There is some substance given off by a carcinoma which induces hyperplasia in surrounding cells. For example, in the beginning stages of epithelioma of the skin it is common to find hyperplastic skin papillæ, showing early malignant change, at a distance from the main growth. In the breast, hyperplasia resembling that of the premenstrual phase is often seen in the neighbourhood of a malignant growth while the rest of the breast is in the resting stage. Not all hyperplastic tissues become malignant because, as F. S. Hammett and F. R. Reimann have shown, fully differentiated epithelial cells do not divide. Malignancy is only possible in those cells which for some reason do not differentiate fully. As regards squamous cell carcinoma it could be objected that the hyperplasia of adjacent skin going on to carcinomatous proliferation was not due to the presence of the primary growth but to the same factor that caused the original tumour. In the breast, however, I have shown that carcinoma in the main duct does induce carcinomatous proliferation in the cells of the lobules.[2] In breasts removed in the premenstrual phase, all stages from normal *premenstrual proliferation to carcinoma* can be traced in favourable sections in the newly formed lobules. The fact that the cells in the *main duct*, which are the result of many divisions, have in some cases *a totally different appearance* from the newly forming carcinoma cells in the lobules, shows that the growth in the lobules is not due to migration there of cancer cells from the main duct. The mode of spread by carcinomatous transformation of the newly formed cells of premenstrual lobules will explain why, in younger women especially, carcinomatous nodules are found scattered through a breast, as Cheatle showed many years ago, in the territory covered by an affected duct and its branches.

FIG. 2



Aged 36. Section taken near the edge of a carcinoma. Breast removed on the fourth day of menstruation. Groups and columns of cancer cells are seen surrounded by fibrous tissue. In the fibrous tissue are clefts, the remains of ductules which have undergone post-menstrual involution.

FIG. 3



Aged 36. Normal lobule from the same breast as Fig. 2. Post-menstrual involution is nearly complete. The ductules have disappeared except for the clefts which mark their site. Only the larger ducts remain.

Under the microscope most breast carcinomas bear no resemblance to the normal tissue, a fact which has puzzled generations of students. A study of what happens to cancer *during the sexual cycle* changes in the breast will show how some of the microscopical *appearances arise.*

When a premenstrual lobule comes under the influence of a carcinoma in one of the larger ducts it is possible either for the cells in the whole or the greater part of the lobule to be affected or for only one or two of the ductules to undergo carcinomatous change. The events in the first of these alternatives will be as follows: (*a*) The cancer cells in each ductule grow and divide. The lumen of the ductule is obliterated and its architecture soon lost. Of course no post-menstrual involution takes place in the carcinoma cells *and before long the periductal connective* tissue is encroached upon and destroyed. By *the time* the next premenstrual phase is due the outlines of the former ductules are barely distinguishable (see Fig. 1). Soon all that is seen is a round or ovoid clump of cancer cells occupying the former site of the lobule. But owing to the destruction of the connective tissue the blood-supply is cut off from the centre of the mass. The centre then degenerates and finally there is a clear central space *surrounded* by a ring of cancer cells. These are not ducts as has sometimes been supposed. They *are* lobules which have become carcinomatous "en masse" and whose *centres have degenerated.*

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* Lenthal Cheatle uses the term "*mazoplasia*" to denote extreme physiological hyperplasia and desquamative cysto-phorous hyperplasia to denote the pathological condition. Mazoplasia has here a b[illegible] significance in that it includes cystic dilatation of ducts [illegible] proliferation which can be ascribed to the [illegible]

[2] Arch. of Pathol., 1929, viii., 653.

SANOCRYSIN WITH THORACOPLASTY

Five cases were treated with this combination. One case will not be considered in detail, because thoracoplasty was performed much later as treatment for a spontaneous pneumothorax that arose in the interval between two courses of sanocrysin; the treatments were in no sense used in conjunction. The value of this combination can best be indicated by a brief account of the other four cases.

No. 2, a man of 33, had a large right hydropneumothorax, the result of a spontaneous pneumothorax five weeks before, and scattered infiltration in the other lung. Temperature 101–102/98–99° F. After sanocrysin treatment his condition was greatly improved, sputum still positive, but evening temperature only occasionally rising to 99° F. He was then successfully operated upon by thoracoplasty, and his present condition, four years later, is good.

No. 11, a man of 39, was admitted with a right pyopneumothorax, which had arisen in an artificial pneumothorax initiated a year previously. The left lung showed no clinical or skiagraphic evidence of infiltration. The sputum was positive, and the evening temperature 100° F. As a result of sanocrysin treatment his general condition improved, evening temperature fell to 99° F., and the sputum became negative. Phrenic avulsion and thoracoplasty were then performed. Four years later he is alive, but has been bedridden for the last 12 months.

No. 96, a man of 29, was admitted with bilateral disease of considerable extent, sputum positive, and temperature 99·4° F. at night. Phrenic avulsion and thoracoplasty were performed on the left side, which was the more diseased of the two, and six weeks after the operation the patient had made an excellent recovery, the amount of sputum had been reduced from 2 oz. to ½ oz. daily, but the evening temperature of 99·4° F. persisted. A course of sanocrysin was given, after which he was able to go to Frimley afebrile and with negative sputum. He is now alive and in good health, two years afterwards.

No. 127, a widow of 39, was admitted with an evening temperature of 98·4–100° F. Clubbing was present, and the sputum was positive. A right artificial pneumothorax had been initiated eight months before, and X ray now showed the diaphragm on that side high and adherent, with much basal fibrosis but no fluid. Phrenic avulsion and thoracoplasty were performed, after which the temperature settled for a time, but two months after the operation it had risen again to 101·5° F., and X ray now showed scattered infiltration in the left upper and middle zones. Although the fever again showed signs of settling, a course of sanocrysin was given; after the second dose the sputum became negative and remained so, and she was eventually discharged to Frimley afebrile and gaining weight. She is now in good health, two years afterwards.

These cases suggest that sanocrysin has a value, either in preparing a patient for thoracoplasty or as treatment for the better side in cases of bilateral disease where the operation is performed on the worse side. It will be convenient to include under this heading a case in which sanocrysin was combined with phrenic avulsion for the latter purpose.

No. 104, a girl of 23, was admitted complaining of cough and loss of weight since broncho-pneumonia and pleurisy two years before. She was somewhat cyanosed, with slight clubbing of the fingers and an evening temperature of 99° F. She was found to have infiltration of the whole of her left lung, the base being especially involved, and infiltration of the upper and middle zones of the right lung. Left phrenic avulsion was followed by a reduction of sputum from an ounce to a drachm daily, but her general condition remained unaltered and she was unable to get up without rise of temperature. After a course of sanocrysin she was discharged to Frimley, afebrile and up for six hours daily, with negative sputum and a gain in weight of 10 lb. She is now alive and in very fair health, two and a half years afterwards.

AFTER-HISTORY

Of the total number of 153 patients, 142 (93 per cent.) have been successfully followed up, and only 11 could not be traced. In view, however, of the several uncontrollable factors involved, it was considered that nothing would be gained by a statistical examination of the after-histories of these patients.

DISCUSSION

This paper is in no wise an attempt to estimate the value of sanocrysin in pulmonary tuberculosis. The criteria to be observed in such a task have been admirably stated by Walters,[4] and include not only a similar group of control cases under similar conditions, but also a knowledge of how the remedy should be employed, how it acts, and under what conditions. Neither of these criteria was available, the first because the routine of a metropolitan hospital makes such control experimentation impracticable, and the second because the knowledge in question has yet to be discovered. Amberson and his fellow-workers [5] have set an example of the carefully pre-arranged plan to be followed in a clinical test of a chemotherapeutic agent, but their conclusions as to the undesirability of sanocrysin treatment cannot be accepted as final until the work has been repeated with different dosage and less advanced types of case. On these questions of dosage and type of case certain conclusions may be drawn from the present series of cases and from the published literature.

The dosage controversy reached its culmination, after seven years, in a recent issue of THE LANCET, when in consecutive papers Secher [6] advocated the large dosage, and Allon Pask [7] stated that he had discontinued using doses larger than 0·75 g. All workers are agreed that some degree of reaction to the drug is desirable, and reaction depends on two factors, the type and extent of the tuberculous process and the dosage of sanocrysin. The more severe the type of case, therefore, the smaller must be the dose if disastrous reactions are to be avoided. Examination of the results published by advocates of small doses reveals the fact that the cases treated were mostly of advanced type. Wurtzen and Sjørslev [8] treated 145 cases with small doses and found improvement in 88 (68 per cent., as compared with 67½ per cent. in the present series); the cases were of advanced type. Faber [9] compared the results of large and small dosage in two groups of cases and obtained better results with the latter; both groups consisted chiefly of Type II. and Type III. patients. In the present series smaller doses were gradually adopted, and the most striking fact which emerges from examination of the clinical material is that a very large proportion of the cases are classified as A3(*a*) or C3(*a*), while not a single case is to be found in classes A1(*a*), A1(*b*), A1(*c*), C1(*b*), C1(*c*), and C2(*a*).

On the other hand, Secher,[6] who adheres steadfastly to the larger doses and who claims "cure" in a considerable number of cases, states clearly that in his opinion "an advanced stage is a contra-indication to sanocrysin, as the patient will be unable to stand the intoxication produced by the treatment." He now reserves sanocrysin for cases where cure, or at any rate considerable improvement, can be anticipated. Stub-Christensen [3] found that large doses were as well tolerated as small by Stage I. patients. Case 1 in this series, who during his course received no less than seven injections of 1 g., was an early case with only eight months' history and afebrile at rest. He showed both symptomatic and skiagraphic improvement at the time of treatment, and five years later was well and working eight and a half hours a day.

Finally it should be noted that Amberson's [5] cases were all either moderately or far advanced, and that he employed a dosage which many would consider too large for the type of case, a fact which may explain his disappointing results.

What is the conclusion? Clinical evidence is accumulating to show that in cases of extensive exudative disease sanocrysin in small doses often has a beneficial immediate effect which may be at least of economic value. There is yet no convincing

Malaise lasting 24 hours or so was complained of in almost every case. Cramps and joint pains occurred in 11 cases, drowsiness in 20 cases, night-sweats in 5 cases, and rigors in 23 cases. Type 3 of temperature reaction was in both cases associated with the appearance of a rash. Type 4 was found in children, in patients destitute of resistance, and as the result of excessive dosage. Of the 31 cases in which Type 5 was encountered, 7 were acute and initial, and 24 were chronic and recrudescent. This distribution supports the view of previous observers that absence of temperature reaction is found in cases where fibrosis is the predominant pathological feature. When albuminuria occurred, it was considered inadvisable to give the next dose of sanocrysin until the urine was clear. The occurrence of a skin rash was not considered an indication to discontinue the treatment, provided that special care was taken with subsequent doses. In only one case was diarrhœa severe enough to necessitate abandonment of the treatment. Focal reaction took the form, subjectively, of pain and tightness in the chest, dyspnœa, and increased cough and sputum; objectively, of an increase in the number of râles.

IMMEDIATE RESULTS

In attempting to assess the immediate results of the treatment, I have taken four factors into consideration: (1) disappearance of bacilli from the sputum; (2) general symptomatic improvement as connoted by lowered temperature and pulse-rate, diminished or absent cough and sputum, absence of lassitude, improved appetite, and increasing weight; (3) changes in physical signs in the direction of fibrosis and diminution in the number and extent of moist sounds; (4) skiagraphic changes suggesting diminished infiltration and increase of fibrosis. Each patient has been marked in these four categories, a half or whole mark being given according to the degree of improvement. Maximum improvement would thus be denoted by +4. Patients showing only −½ or +½ have been regarded as unaffected by sanocrysin.

In 36 cases no record of the sputum findings was available, and 9 patients were negative throughout their stay in hospital. Of the remaining 108 cases with a positive sputum, 49 became negative during treatment, a bacillary loss of 45 per cent., which is comparable with the 43·9 per cent. given by Stub-Christensen[3] as the figure for his early period, when many unsuitable cases were included. In five cases the sputum became positive during treatment; in two of these it remained positive, while in three it became negative again before the end of the course. It was disappointing to find that the disappearance of bacilli was in a large number of cases not permanent. Thus, of the 49 cases who showed disappearance of bacilli during treatment, no less than 29 were known to have become positive again within three months, and probably there were others, as it was not found possible to follow up every case on [illegible] [illegible] this point.

TABLE III

	Cases and per cent.
Died	3 (2)
Worse	14 (8½)
Unchanged	31 (22)
Improved	78 (51½) } = 67½ per cent.
Much improved	24 (16) }

The general results are given in Table III. "Improved" denotes less than +3; "much improved," +3 or over.

The relative results in the two main groups of cases are given in Table IV.

TABLE IV

—	Cases.	Died.	Worse.	Un-changed.	Im-proved.	Much im-proved.
		Cases and per cent.				
Group A	68	3 (4½)	5 (7½)	9 (13½)	32 (47)	19 (27½)
Group C	85	0	9 (10)	25 (30)	46 (54)	5 (6)

Group A, it will be seen, contributes a large proportion of the "much improved" cases, but also the only three cases who died during treatment. It may be noted here that of the 19 Group A patients classed as "much improved," 14 were 25 or under in age, and 10 of these were actually only 21 or under. Group C includes a relatively large number of unaffected patients, but also shows quite a high percentage of improvement if the total results are taken:—

Group A .. .. 51 improved = 74½ per cent.
" C .. .. 51 " = 60 "

These facts support the generally accepted view that dramatic results are more likely to be obtained in young patients with recent exudative disease, and that fibrotic cases, although apt to be unaffected by sanocrysin, do frequently show some improvement.

The relative results in 1926, when large doses were used, and in 1927–28, when more caution was employed, are given in Table V.

TABLE V

Year.	Cases.	Died.	Worse.	Un-changed.	Im-proved.	Much im-proved.
		Cases and per cent.				
1926 ..	43	0	5 (12)	12 (28)	19 (44)	7 (16)
1927–28.	110	3 (3)	9 (8)	22 (20)	59 (53½)	17 (15½)

The difference is not striking, but enough to warrant the use of small doses, at least in the severe type of case under discussion.

SANOCRYSIN AND ARTIFICIAL PNEUMOTHORAX

Several patients in this series at some time or another received collapse therapy as well as sanocrysin, but only those will be included here who were treated "de novo" with the combination. The combined method was used in 18 cases; in 11 of these collapse was induced on the worse side while gold was given for the other lung; in two cases treated in the first place with pneumothorax for unilateral disease, sanocrysin was given for fresh infiltration in the other lung; in two cases sanocrysin was combined with bilateral pneumothorax; and in three cases of unilateral disease collapse therapy was found to be insufficient and the combination was used. The results are given in Table VI.

TABLE VI

	Cases and per cent.
Worse	4 cases (22)
Unchanged	No "
Improved	10 " (56) } = 78 per cent.
Much improved ..	4 " (22) }

No final conclusion can be drawn from such a small number of cases, but the figures certainly lend some support to the view that sanocrysin is of value in conjunction with collapse therapy.

place, and now I am thankful to say I am cured. I have no pain in my feet; I can walk seven miles with ease and comfort; and I feel that a new lease of life has been granted to me." Now I take credit to myself that on receipt of that letter I realised that this was not an occasion for petty annoyance or for standing on my dignity. Here was a most typical case of one of the commonest complaints in orthopædic surgery, which I had treated. no doubt you will say, very badly, and I agree, but at least I will say conscientiously and according to the accepted principles of all the leading orthopædic surgeons of the day. Yet I had failed miserably, and the patient had gone to a bone-setter who had promptly cured her.

I sat down and I asked myself three questions. First, was this genuine? Yes, undoubtedly it was. I knew this patient well. and I had no doubt that, whatever the explanation, she had been relieved of her pain. Besides, we had heard of many similar cases where patients had failed to get relief from orthodox treatment and had then been cured by bone-setters. So my second question was: what is it possible for a man (any man) to do to a foot with his hands alone? The answer is that, apart from rubbing or massage (with which we are not now concerned), he can do nothing except *move* it. In what way, then. can one man's movement or manipulation differ from that of another? We had often manipulated feet, when we thought it was indicated, but we had not had the dramatic successes that were claimed by bone-setters. The answer to this is that he can only move it with more force, or in a *different direction. or both.*

Now here was the key to a riddle which had puzzled surgeons for many years, and, like all riddles when you know the answer, it is extremely simple.

The Secret of the Bone-setter

The human foot is always described as a structure built in the form of an arch, and it is commonly believed that this arch is maintained, at least in part, by the ligaments and fasciæ of the sole, and that when these give way the individual suffers from flat-foot. This is a half-truth which is little better than a lie. The truth is that the natural foot, as seen in bare-footed races who have never worn boots or shoes, is completely flat when its muscles are relaxed and arched only when the muscles are *in action.* You may observe the same thing in the feet of the best ballet-dancers; their feet also are completely flat when *standing at ease* and highly arched only when their powerful muscles are in action. You can see it also in the feet of your own children, when they are beginning to walk. In short, the natural foot should be so supple, it should have such mobility, that it can be completely *flattened or raised in the* form of an arch at will, and the attitude of the foot at any moment is determined by the action of its muscles.

Unfortunately, nearly all civilised people from early childhood onwards encase their feet in stiff leather coverings—boots or shoes—with the result that much of the natural mobility of the foot is lost and the feet become *fixed in* a position of action—that is, with more or less of a fixed longitudinal arch. The individual is then compelled for ever more to keep his body-weight raised above this minimum height of arch, for otherwise he will press it down and stretch and strain the soft parts which are shortened and adapted to the arch. There cannot be strain without resistance. If a foot can flatten completely without resistance, it is painless, and the completely flat-foot nearly always is painless. People do not suffer from flat-foot, but from inability to flatten their feet—that is, from foot strain.

For years and years both the medical profession and the public have been obsessed with the idea of putting up. restoring. and supporting the arch of the foot. It has been a miserable failure. I do not deny that a slight so-called support may give a measure of relief in some early cases of foot strain, but the relief is usually *short-lived. A rigid support* converts the would-be supple foot into a rigid system without spring, elasticity, or comfort. The bone-setter, on the other hand, to give him his due. tumbled to the fact that the right treatment of a strained *foot was to remove the resistance to flattening, to* restore or increase its mobility. so that it could yield and flatten without meeting resistance. Note, then, how his movement or manipulation differed from ours. We had used as much force as he used. We had even on occasions used a spanner, a thing called a Thomas's wrench, which gives enormous leverage and far more force than can be applied with the hands alone. But we had always tried to push up the arch of the foot and to mould it into what we thought was its natural shape. He manipulated in exactly the opposite direction, abducting, everting, and flattening out the sole to the utmost.

The proof of the pudding is in the eating. For many years now we have manipulated all cases of *foot strain,* which is miscalled *flat-foot.* We do it better than the bone-setter, because we employ full anæsthesia and so have complete control of the foot. We do it more safely, because we can make a differential diagnosis and we do not manipulate indiscriminately cases of foot strain, tuberculous joints, and feet that are stiff from chronic arthritis. The results are most gratifying. for the great majority of cases are promptly relieved of their pain and disability.

Perhaps I can hear some of you say, "flat-foot as we know it is a most unsightly deformity, with its turned-out feet and its ungainly walk. Do you really mean to tell us that you deliberately make these people more flat-footed than before?" No. I don't. You will find that when they are relieved of their pain and stiffness by manipulation they begin to use their muscles normally again. and I have told you that the attitude of the foot is but an expression of muscular action. Massage and exercises here play a part in the after-treatment. and in this respect also we have improved on the empirical treatment of the bone-setter. Again I say, this is not all specialists' work which has nothing to do with general practice. These cases abound in general practice, and it is work that anyone can do who cares to do it.

How are you to recognise these cases? That is easy. The patient complains of pain in his feet, they ache when he has been on them, and he gets so easily tired. The pain is referred typically to the inner border in the region of the astragalo-scaphoid joint; *commonly,* also, to the outer side below and in front of the external malleolus; and sometimes to the fore-part of the foot. The condition is brought on by prolonged standing or over-use of the feet. or as the result of muscular debility. as on getting up after an illness. There may be a history of injury—a twist or sprain—some time before. Such cases. of course. are often unilateral. Now stand the patient up and *look at his feet.* You will probably say that he has flat-foot. But do not be deceived by the eversion of the foot as a whole. Take hold of the foot in your evidence that this effect is lasting, in fact such a contingency is unlikely in the type of case under consideration. The following indications are suggested for its use :—

(1) In cases of active infiltration, where for any reason the time factor is important, it being reasonable to infer from these cases that the improvement shown in general condition, physical signs, and skiagraphic appearances would have taken longer to obtain by ordinary methods of treatment.

(2) In certain cases which remain pyrexial on exercise after three months' institutional treatment: (*a*) cases in which collapse therapy is impossible owing to adhesions or any other cause; (*b*) cases which have already been treated by artificial pneumothorax, phrenic avulsion, or thoracoplasty.

(3) In certain cases in conjunction with one of the forms of collapse therapy.

(4) In cases of extreme gravity, where all other treatment has proved unavailing, in view of the fact that results little short of miraculous have been recorded after its use.

The case for the use of large doses in treating the disease in its early stages remains unproven, and it is suggested that there is a real need now for further investigation of this question on the lines laid down by Amberson and his colleagues.[5]

SUMMARY

A review of 153 patients treated with sanocrysin shows that the most dramatic effect, in the direction either of improvement or the reverse, is obtained in young patients with exudative disease, and that fibrotic patients, although more likely to be unaffected, do in a considerable number of cases show definite improvement. Promising results are obtained from its use in conjunction with artificial pneumothorax, phrenic avulsion, and thoracoplasty. There is need for further controlled investigation, particularly of the effect of large doses on early cases showing a relatively slight degree of lung involvement.

My sincere thanks are due to the honorary medical and surgical staff of the Brompton Hospital for permission to use their cases in this investigation. It was carried out with the aid of a grant from the Hospital Research Fund.

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HOME ACCIDENTS.—A "safety in the home" committee has been formed at Sheffield in consequence of the large number of indoor accidents, especially to children and old people. It is stated that whereas traffic accidents treated at Sheffield Royal Hospital are only 4 per cent. of the casualties treated, domestic accidents amount to 20 per cent.

REMEDIAL PHYSICAL TREATMENT AT KING'S COLLEGE HOSPITAL.—Last week Dr. Barrie Lambert, chairman of the public health committee of the London County Council, opened an extension of the physical treatment department of King's College Hospital. Lord Gorell, the chairman of the hospital, stated that in 1921 the number of patients in the department was 35,200; last year it was 60,500, and this year the number has increased to 110,000. The number of massage students has grown from 30 to 70, and in an examination open to all England, King's College students took first and third places. The new premises were formerly the students' refectory.

MANIPULATIVE SURGERY IN GENERAL PRACTICE*

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IT is now the fashion to speak of manipulative surgery, but the term has nothing to commend it. There is no conceivable reason why the simple procedure of moving a joint or joints for therapeutic purposes should be exalted into a special branch of surgery with a high-sounding title like "manipulative surgery." The term was invented, not by us, but by a bone-setter who, having achieved considerable popularity, decided to call himself a manipulative surgeon and thereby seek to attain to the higher status which such a name implies.

Manipulation is not a highly specialised branch of surgery with a difficult and mysterious technique which can be practised only by a few highly trained or specially gifted individuals. It is really the simplest thing in the world, if you only know, and it can be done by anyone who has two good strong hands and an inclination for minor surgery. It is done regularly by my young house surgeons and registrars as a part of their routine work. I do not deny that a certain facility in manipulation is acquired by practice and experience, but, after all, that is true of all manual procedures, whether at work or at play.

It is true that surgeons generally were slow to appreciate what might be done by manipulation in certain cases, and that the conspicuous success, not of one, but of many bone-setters was one of the factors which compelled their attention. But there were reasons, if not excuses, for this tardy recognition. In the first place, surgeons were very much preoccupied with the abdomen and the bigger things of surgery. Orthopædic surgery itself was not officially recognised as a specialty in this country until the year 1913, and then only under vigorous protest from many of the older surgeons. Moreover, the obviously false diagnosis of "a small bone out of joint," upon which the bone-setters' practice was ostensibly based, was calculated to prejudice surgeons against it, and to blind them to the good which might be achieved empirically. Lastly, a very large proportion of the cases regularly seen in orthopædic practice have previously been treated by bone-setters, so that orthopædic surgeons were perhaps unduly familiar with the unsuccessful side of manipulative surgery. For there is an unsuccessful side, and it is well to appreciate the limitations as well as the possibilities of manipulation in surgery.

Many years ago I received a letter from a patient of mine—an intelligent, educated, middle-aged woman. She reminded me that some two years previously she had consulted me for pain in her feet due to flat-foot. While under my treatment she had done everything that I had told her to do. She had worn the special boots that I had ordered, with the wedges and the supports. She had had the massage and done the exercises which I had prescribed for her. But she had got no better, and she began to fear that she would be crippled for life. Then she consulted a bone-setter. "He" she wrote; "he, with his wonderful hands, put the bones of my feet back into has been poured out, chiefly from America, about what Americans have called "low back pain." In my opinion the subject has been needlessly elaborated and a great deal of what has been written is purely imaginary. The cases included in this category fall mostly into four groups: (1) sacro-iliac strain; (2) lumbosacral strain; (3) acute and chronic lumbar back strain; and (4) spinal arthritis, with or without sciatica. In addition to these, of course, we meet with cases of true lumbago, Pott's disease, compression fractures of the lumbar vertebræ, and other less common conditions which are easily distinguished by their characteristic signs.

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* A paper read at the Paddington Medical Society on Oct. 11th, 1932.

SACRO-ILIAC STRAIN

Strain of the sacro-iliac joint is the commonest cause of persistent pain in the lower part of the back. The sacro-iliac joint is exceedingly strong and possesses a very small range of normal movement, while the forces acting upon it are very great. If during some sudden or unguarded movement the joint is forced beyond its normal range, it is strained or sprained like any other joint in similar circumstances. Such strains are very common; but that any gross or demonstrable displacement or subluxation of this joint occurs, except in the rarest instances, has never been proved either by clinical or by radiographic examination. Sacro-iliac strain either comes on suddenly with a sharp pain in the joint during some effort or after a fall, or it may seem to come on gradually. Many patients who give a history of gradual onset will, however, recall a strain or an injury when they are questioned about one. It is especially common in women, and not infrequently follows childbirth or gynæcological operations. The patient complains of pain over the back of the sacro-iliac joint, usually worse after sitting and often better when he is walking about. He has a feeling of insecurity which is quite characteristic. When asked to localise the pain, he feels more or less accurately for the posterior superior spine of the ilium, which overlies the centre of the joint, and firm pressure over this point and immediately below it evokes an expression of pain, which is almost enough for a correct diagnosis. In fact, the only serious condition to be excluded is tuberculous disease of the sacro-iliac joint, which is comparatively rare, much more disabling, and seldom presents itself before there is either an abscess or obvious signs of bone destruction in the radiogram If this condition is not recognised and properly treated it may persist for years, and a considerable degree of neurosis is often developed.

The treatment is usually simple and straightforward. The great majority of cases (over 90 per cent.) are cured by manipulation, and occasionally the cure is sudden and dramatic. It is exceptional to find a case that obstinately resists manipulation, though some cases have to be manipulated more than once. The few that are not so cured can be cured by arthrodesis of the joint. The actual manipulation employed is a forcible twist of the pelvis under full anæsthesia, while the patient is turned half over, so that the leg on the affected side hangs over the side of the table. Massage and exercises are commenced on the following day and continued for a month, or as long as may be necessary.

LUMBOSACRAL STRAIN

Lumbosacral strain is quite different from sacro-iliac strain and should not be confused with it, even when, as sometimes happens, the two conditions are combined. As in sacro-iliac strain, there may be a history of inj [illegible] adual onset, and the latter history is usually associated with faulty posture. When the patient is asked to localise his pain, he draws his fingers horizontally across the back above the base of the sacrum. Tenderness on pressure is definitely localised to the tip of the spinous process of the fifth lumbar vertebra and the space below it. Pain is also felt on hyperextending the spine. There may be some spasm of the erector spinæ muscles, but usually the patient can bend forwards fairly freely, the movement taking place in the lumbar spine above the lumbosacral junction. These signs are quite sufficient for a diagnosis.

Now this condition looks as though it ought to be amenable to manipulation, but in our experience it is not, and the reason, I think, is that the lumbar spine is so movable that it is impossible to localise manipulation accurately to the lumbosacral junction. But it occurred to us that, if we could not stretch the ligaments, we could divide them. We therefore excised the spine of the fifth lumbar vertebra, thereby ensuring that everything attached to it was divided, and in every case in which we have done this the pain has been relieved and has not returned since. This is a minor operation, and I give it to you for what it is worth.

ACUTE AND CHRONIC LUMBAR BACK STRAIN

Acute back strain is another very common condition which presents quite definite clinical features. It is essentially a localised rupture of some of the deeper fibres of the erector spinæ muscle on one side, produced by muscular action. In proof of this is the fact that occasionally, though rarely, one of the transverse processes of a lumbar vertebra is pulled off by the violence of the muscular contraction. Without warning, the patient experiences a sharp pain like a stab in the back, either during some special effort, such as lifting a heavy weight, or while stooping in an awkward position. The sharp pain is succeeded by a dull ache in the back, which is most noticeable when the patient is sitting with the muscles relaxed. Later, the lumbar spine is found to be rigidly fixed by spasm, and every attempt at movement is pulled up by a sharp stab of pain in the back. On examination, the whole of the lower part of the back is found to be hyperæsthetic, and there is a localised point of tenderness over the erector spinæ on one side.

If seen when the condition has become chronic, there is a history of sudden onset, there is a point of localised tenderness over one erector spinæ, the muscle on one or both sides is strongly in spasm, and when the patient tries to bend forward he either does not bend at all or he inclines towards the painful side. Frequently there is a considerable degree of added neurosis, and I do not know of any trivial injury which causes such a profound and disproportionate sense of disability. The radiographic appearances are normal except in the rare instances in which there is a fracture of a transverse process.

The treatment of acute and chronic back strain should be prompt and decisive. It consists in immediate mobilisation of the spine by forcible manipulation under an anæsthetic, followed by massage and exercises. This usually cures the condition outright, unless there is an impending claim for compensation or a long-standing neurosis. The manipulation is practically the same in all cases—namely, forcible flexion, rotation in both directions, and finally hypertension.

SPINAL ARTHRITIS, WITH OR WITHOUT SCIATICA

A patient with spinal arthritis may or may not complain of his back. Many patients with this condition are quite unaware that there is anything wrong hands, and move it about in all directions, and particularly try to flatten out the sole. You will find that the movements are more or less restricted, and that in the traumatic cases there is usually stiffness and some pain on inversion as well as on eversion of the foot. If the foot is rigid from arthritis, leave it alone, or at least be cautious in your prognosis. Otherwise, manipulate without hesitation.

The manipulation consists in forcible movement of the foot in all directions, but particularly in the direction of abduction and eversion, and I must add that it is a man's job. Make no mistake about this; the manipulation is forcible and even violent. The manipulation of an adult foot often requires all the strength that a strong man can put into it, and I defy you to damage an adult foot with your hands alone. Next morning, put a good masseur on, and tell him to mobilise the foot and give exercises. The shoes, provided that they are well made and of a good shape, may be of the ordinary conventional type. A well-known bone-setter is said to have made two-thirds of his fortune by simply moving feet that other people would not move. It was not a stunt or deception practised on a credulous public, but perfectly sound surgery—empirical, it is true, but effective.

Twists and Sprains of the Knee

Now many, perhaps most, orthopædic surgeons would put the knee first among the joints which most often require manipulation. Personally I should put it third. But at any rate chronic sprains of the knee are very common, and the bone-setter might well have made approximately the other third of his fortune by empirically moving knee-joints that other people would not move. I use the word "empirically" deliberately, because I have evidence that this manipulation, too, was based upon an erroneous idea of the pathology of the condition—yet it served its purpose.

Twists and sprains of the knee-joint are very common. The usual mechanism is that, while the foot and leg are fixed upon the ground and the knee is slightly bent, the femur is forcibly rotated inwards by the whole momentum of the moving body swinging inwards. This movement of rotation actually takes place between the upper surface of the head of the tibia and the under surfaces of the semilunar cartilages. When the head of the tibia has reached the limit of its normal movement in this direction a state of tension arises and, if the force continues, something has to give way. On the inner side the tibia tries to drag the internal semilunar cartilage forwards. But the posterior end of this cartilage is firmly held down by the condyle of the femur and also by its attachment to the internal lateral ligament, so that a great longitudinal strain is thrown on the curved cartilage. A common result of this accident is that the cartilage is torn from its peripheral attachment to the capsule and springs like a bow-string towards the centre of the joint. This is the familiar bucket-handle detachment of the cartilage which is so often found at operations for displaced semilunar cartilage.

The symptoms of torn and displaced semilunar cartilage have been known to surgeons for very many years, and they are described in all text-books of surgery. It is universally recognised that, when a joint is "locked" by the cartilage getting caught between the bones, it must be freed at once by manipulation, for, if it is left, it will do irreparable damage to the joint. It is also known now that the only thing that manipulation can do in such a case is to displace the cartilage further towards the centre of the joint, where it may lie in the intercondylar notch, and with luck may not give trouble for a long time. It is known that a detached cartilage cannot be made to retrace its steps, as has been claimed by some people. And, lastly, it is known that fibrocartilage does not heal, so that even if it could be restored to its original position it would not become re-united. Personally I believe that a displaced cartilage should always be removed, because it nearly always gives rise to further trouble sooner or later, and it is significant that a very large proportion of the cases that are treated by manipulation in the first place come eventually to have their cartilages removed by operation.

But what surgeons failed for so long to grasp was that exactly the same accident which, if it went far enough, would tear the cartilage, might in fact stop short of actual detachment and produce instead a sprain of the peripheral attachment of the cartilage. A sprain is a rupture or tear in a minute or microscopical sense. A few fibres of the ligament are separated or torn; there is a little hæmorrhage around them, followed by exudation of fluid and infiltration by connective tissue cells—in fact, the usual simple inflammatory reaction to an injury, which ends either in complete resolution or in the formation of new fibrous tissue or adhesions at the site of the injury.

In the knee-joint this condition gives rise to a characteristic train of symptoms. There is usually a history of an initial twist of the knee, followed by pain on the inner side and perhaps some synovitis, but never any locking of the joint. The patient complains that the knee is weak, that it tends to give way, and that he then gets twinges of pain on the inner side, and perhaps some swelling. On examination, the knee looks normal; there is often a tender spot on the inner side over the joint cleft; movements appear to be normal, though there may be some pain on outward rotation of the leg; there is also some wasting of the quadriceps.

Now surgeons would not operate upon these cases, because there was no typical locking of the joint suggesting displacement of the semilunar cartilage, and, being unfamiliar with this minor degree of the same injury, they did nothing, except order some ineffective massage. So that the patients went in large numbers to bone-setters, who promptly cured them by manipulation, because these cases respond readily to manipulation of the joint. The bone-setter diagnosed them as cases of "slipped cartilage" and professed to put the cartilage back. Actually they were cases of chronic knee strain with adhesions about the peripheral attachment of the cartilage. But, as they were easily cured by manipulation, the bone-setter got the reputation of being able to cure cartilage cases without operation while the surgeon could only cure them by operation. The manipulation, of course, consists merely in forcibly putting the joint through its full range of movement in all directions, not forgetting rotation of the head of the tibia. The results, as I have said, are entirely satisfactory, the great majority of cases being promptly relieved of their pain. Here again we can improve upon empirical treatment by employing a proper anæsthetic and by ensuring efficient after-treatment.

Pain in the Back

In my experience, after the foot, the spine and the pelvic joints are the parts which most often require manipulation, and the conditions which call for it are among the commonest in general practice. In recent years an enormous volume of literature negative. He manipulated osteo-arthritis, he said, often with great benefit.

Dr. N. D. DAMRY related an experience of fracture of the olecranon in India. The doctor had frightened the patient, but the bone-setter had set it, supported it for a few days, and then manipulated the limb, with excellent result. Bone-setters had, he said, led the way in the doctrine of early movement.—Mr. BANKART said that in his experience *the last thing a bone-setter in this country* would do was to set a bone; if he suspected a fracture he passed the case on at once.

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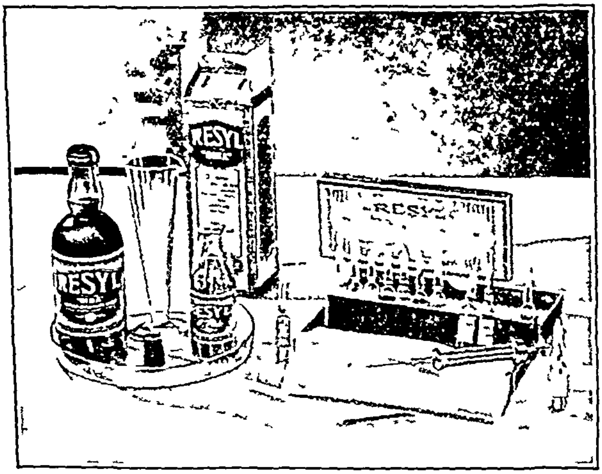

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colloids or other substances by inflamed tissue. The third part consists of a general discussion, and includes a section devoted to the consideration of the process of localisation on therapeutic measures.

Dr. Burrows has read widely. His book contains a wealth of information which will be of value to workers in this subject, and a bibliography of over 400 references is appended. Certain of his conclusions, however, seem to have little application to disease as it occurs in the human being. The numerous examples which he details of the metastatic localisation of various infections are of interest, as illustrations of a process which has long been recognised, but they do not explain the incidence of the primary disease; and in our view the author stretches his argument beyond reasonable limits when he applies his theory to the cancer process. It may be, as he says, that a primary malignant growth is due to the localisation of a circulating cancer virus in an area of inflamed or damaged tissue, but this is merely a hypothesis. Again, it is hardly correct to say that several malignant tumours in animals are initiated by viruses; nor will most pathologists agree that malignant metastases are due to the arrest of malignant emboli by the macrophage cells of the reticulo-endothelial sinusoids. One of the most pleasant features of the book is the series of coloured plates illustrating the localisation of pigments in the lesions produced in animals. These are beautifully reproduced, and indicate the valuable possibilities of intravital staining.

Clinical Atlas of Blood Diseases

Second edition. By A. PINEY, M.D., M.R.C.P., Director of Pathological Department, Cancer Hospital, London; and STANLEY WYARD, M.D., M.R.C.P., Physician to the Hospital. London: J. and A. Churchill. 1932. Pp. 105. 12*s*. 6*d*.

THE new edition of this atlas is in every way a worthy successor to its predecessor. The colour plates are among the best of their kind ever published and reflect the greatest credit on the artist, Mr. J. R. Ford, and on the printers. The letterpress accompanying the plates is apt and concise; the microcytic anæmia associated with absent or deficient hydrochloric acid in the gastric juice which has been described in this country by L. J. Witts and is probably the commonest of all types of anæmia in the British Isles escapes specific mention, but most of the common conditions are well described, while every possible hæmatological rarity receives attention.

An Introduction to Sexual Hygiene

By A. BUSCHKE, M.D., and F. JACOBSOHN, M.D. Translated by EDEN and CEDAR PAUL. London: George Routledge and Sons, Ltd. 1932. Pp. 193. 7*s*. 6*d*.

THIS book is a good example of a literature that is becoming profuse; it is, however, a translation from the German and there may be more need for it in the country of its origin than there would seem to be here. The structure and function of the reproductive organs of both sexes are clearly set out, some elementary considerations in respect of reproduction will be useful to lay readers, and the essays upon the problems of puberty and the sexual impulse are well devoid of fine writing and quite sane in their teaching. Facts that are disagreeable, some of which were till recently not accepted as facts, are faced, and the reasons for the conclusions upon debatable points are given. The advantages of birth control are taken for granted and some elementary information is supplied concerning certain techniques. Monogamy is regarded as the ideal form of marriage both for men and for women, and all forms of "modified marriage" are condemned. But a quasi approval of "companionate" unions, as a substitute for the early marriage that is so difficult in modern conditions, must be dependent upon the successful practice of birth control.

New Babes for Old

By WINIFRED DE KOK, M.R.C.S., L.R.C.P. London: Victor Gollancz. 1932. Pp. 191. 5*s*.

THIS book, which is intended for parents, contains an account of the development of infants and small children, and advice on their management and upbringing. It is written from the psycho-analytic point of view, and is illustrated throughout by notes of the progress and achievements of the author's children. Much stress is laid on the importance of weaning, in the happy management of which the seeds of all future conduct are held to lie. Much of the advice in this book will probably be found to work well with many children, but there is little recognition of the diverse ways in which different children respond to the same mode of upbringing. In some cases the author's optimism may lead to disappointment on the part of parents who adopt her recommendations, some of which are rather difficult to apply to existing social conditions.

A Manual of Pharmacology

Fourth edition. By TORALD SOLLMANN, M.D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. London: W. B. Saunders Co., Ltd. 1932. Pp. 1237. 37*s*. 6*d*.

THIS important work has been revised and reprinted on ten occasions since it was first published in 1917. Prof. Sollmann's chief object has been to furnish medical students and practitioners with an outline of the current conception of the actions of drugs, especially from the point of view of their practical importance in medicine, and in this he has succeeded admirably. The book is, however, much more than a mere outline. By relegating to small print parts which the author does not regard as having a direct bearing on medical practice, he has been able to present a mass of information on all aspects of pharmacology, and has, in fact, made his book the best work of reference on the subject in the English language. He has added also an extensive bibliography which should be of great help to the practitioner and investigator who may desire to form an independent judgment or to obtain additional information. In the new edition many of the sections have been rewritten, the most important being those on the barbiturates, sexual hormones, arsphenamine compound, temperature regulation, vitamins, and the iodine compounds employed in roentgenography.

The book can be cordially recommended to everyone who desires an accurate and up-to-date work of reference on pharmacology.

THE LANCET

LONDON: SATURDAY, OCTOBER 15, 1932

PROFESSIONAL SECRECY

At the St. Pancras inquest, reported in another column, a medical practitioner was found to have taken the unusual step of cutting off and destroying the upper parts of the pages of his case-book sooner than permit the police the possible investigation of his patients' secrets. The privilege, it must be remembered, is the privilege of the patient not of the doctor. The moral obligation of professional secrecy is well established. There is undoubtedly a legal obligation as well. Some years ago, when the Court of Appeal was examining the banker's duty not to disclose his customer's account, Lord Justice Scrutton, in declaring that secrecy was an implied term of the contract between banker and customer, suggested that the same term would be implied between doctor and patient. In other words, a doctor is liable to an action for damages if he wrongfully discloses his patient's confidences. Lord Riddell, in his little volume on "Medico-Legal Problems," remarked that the absence of copious direct legal decision on this point must be due to the consistently discreet and uncommunicative behaviour of the medical profession. It is well known that no cause of action can arise in respect of anything said by a witness in a court of law. Nor is there any doubt that the law insists on a doctor answering in court all such questions as the interests of justice may require to be put to him. Refusal to answer exposes him to the serious and summary penalties inflicted for contempt of court. It is not quite clear to what further lengths legal insistence will go. The doctor must give information to the judge in court: need he give it to the policeman outside? Is he obliged to set the criminal law in motion?

A simple and possibly not uncommon example of the dilemma occurs where a doctor is called in to attend a woman upon whom an illegal operation has, as it seems to him, been performed. What is he to do? In 1896 Mr. Justice Hawkins told a grand jury that he very much doubted whether, in such a case, the doctor could be justified in reporting the facts to the Public Prosecutor: "such action would be a monstrous cruelty." The Royal College of Physicians of London thereupon took the opinion of the late Sir Edward Clarke and Mr. Horace Avory (now the distinguished High Court judge) who confirmed Hawkins's opinion. A medical man, they advised, was not liable to be indicted for the practically obsolete offence of misprision of felony, merely because he does not inform the police in a case where he suspects criminal abortion. Misprision of felony, it may be explained, is the offence of concealing (or procuring the concealment of) a felony when one knows that some other person has committed a felony. In December, 1914, Mr. Justice Avory reopened the matter by enlarging, as it seemed, the medical practitioner's responsibility. A woman who died as the result of an illegal operation had been attended by three doctors. She was understood to have mentioned to one or more of these the name of the abortionist. But, because none of the doctors passed on the information to the police, no dying statement was taken, and there was insufficient evidence for convicting the person accused in the case. The learned judge, while conceding the general duty of medical secrecy, told the grand jury that this was an instance where the desire to preserve the confidential relation should have been *subordinated to the good* citizen's duty to assist in the investigation of serious crime. Expressing the wish to clear up all misunderstanding or misrepresentation as to the opinion he had given 20 years earlier, Mr. Justice Avory declared that it might be the moral duty of the medical man, even in cases where the patient is *not dying or not unlikely to recover*, to communicate with the authorities when he sees good reason *to believe that a criminal offence* has been committed.

> "However that may be, I cannot doubt that in such *a case as the present, where the woman is, in* the opinion of the medical man, likely to die, and therefore her evidence likely to be lost, it is his duty; some one of these gentlemen ought to have done it in this case."

It is noteworthy that the words "moral duty" rather than "legal duty" were used. One might also perhaps classify judicial colloquy with a grand jury as something less conclusive and authoritative than a decision of the Court of Criminal Appeal. Not unnaturally, the observations uttered at Birmingham took the medical profession by surprise. Amongst other bodies which examined the legal position more closely in consequence, the Royal College of Physicians of London obtained from the censors' board a report containing medical and legal opinions. This report was adopted by the College in July, 1915, and was circulated to the Public Prosecutor, the Royal College of Surgeons, the General Medical Council, and the medical press. The Public Prosecutor taking exception to some of the legal advice, the terms of the report were varied. Finally, resolutions of the College were published in February, 1916, after obtaining the opinion of counsel (the late Sir Richard Muir). Counsel's opinion was mainly devoted to the admissibility in evidence of dying statements, and the method of recording such statements. The resolutions first sum up what the College believes to be the proper professional practice. That is to say, they reaffirm the solemn duty to respect a patient's confidence. They state that the doctor who is convinced that a third person has performed an illegal operation should urge his patient, especially if she is *likely to die, to make a* statement which may be available against the abortionist, provided always that the effort of persuading the patient does not prejudice her prospect of recovery. They state that the College

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this greater mortality from tuberculosis of the lungs or tracheo-bronchial glands in Scottish children in contrast with those in other parts of the world. "It may be," he writes, "that, on account of the relatively isolated position of this country as compared with others, the opportunities for infection in the past . . . have prevented the development of the same racial resistance in Scottish people as in those of other countries."

A noteworthy feature of Dr. BLACKLOCK's investigation is the light which he throws on the pathway of infection to the lung and lymphatic glands. A characteristic primary lung lesion was described originally by PARROT (1876), KUSS (1898), and later by GHON, CANTI, and others, as occurring in the human subject and corresponding to the primary site of infection. This lesion was found by Dr. BLACKLOCK in 148 out of 173 cases in which the first site of infection was considered to be thoracic. Of the cases with primary foci, 133 had one each, and in 15 they were multiple, giving a total of 170 primary lung lesions. All of them showed evidence of caseation; in some further changes—cavitation, fibrosis, or calcification—had occurred. These primary lesions were found more often in the right lung than in the left, the right upper lobe being most frequently involved, and then in order, the right lower, the left upper, the left lower, and lastly the right middle lobe. The anterior aspect of the upper and middle lobes was most frequently affected, the apex of the upper lobes, however, was seldom the site of a lesion. In both lower lobes the primary foci were most frequently found in the lower two-thirds posteriorly. The tracheo-bronchial glands in direct anatomical relation to these foci were always diseased, and the important fact emerged that the occurrence of the primary lesion in any particular lobe was the important factor in determining the distribution of the glandular lesions. Macroscopic and microscopic examinations indicated that the lesions in the primary focus and related lymph glands were either of the same age or else that in the glands was more recent. No retrograde spread from the tuberculous tracheo-bronchial glands back into the lung substance was observed. In some of the cases there was spread of the tuberculous adenitis to the glands in the neck, or to the lymph glands in the upper part of the abdomen, but this was always secondary to that at the root of the lungs, and the intensity of the adenitis diminished the further away it was traced from the glands in direct anatomical relation to the focus in the substance of the lung. Concerning the significance of these primary foci, the pathological and histological evidence cited renders it unlikely that they are of hæmatogenous or lymphogenous origin. Dr. BLACKLOCK concludes that they are ærogenic, and adds that unknown factors must determine the predominant localisation to a single primary focus. From cases in which the primary lung lesion was found, only human types of bacilli were obtained, either from the lesion itself or from the glands in direct anatomical relation. If the focus had been of hæmatogenous origin, bovine bacilli should frequently have been found, in view of the fact that bovine strains were isolated from 81·8 per cent. of the primary abdominal lesions in children from the same series of autopsies as those with primary thoracic lesions.

Tuberculosis in the child is an obscure and controversial subject. Dr. BLACKLOCK's report contains a great wealth of material, skilfully handled. It should do good service in letting light into many dark places, and his pathological and bacteriological evidence should be reflected in more reasoned clinical treatment and the medical administration of juvenile tuberculosis.

FIFTY MILLION BOTTLES OF MEDICINE

THE Ministry of Health tells us that last year over 50 million prescriptions were dispensed for 15 million insured persons, and that of these prescriptions over 60 per cent. were for mixtures. Yet, as Dr. E. KAYE LE FLEMING so pointedly emphasised in his inaugural address to St. George's students, abstracted in our last issue (p. 801), the art of prescribing is not a strong point in the general practitioner's training; much more instruction, he thinks, might well be given in the medical curriculum on this subject. Dr. LE FLEMING went on to deprecate the use of the phrase "the bottle of medicine fetish"; this gibe, he said, comes more often than not from a critic with no personal knowledge of prescribing, and who is as ignorant of the real therapeutic value of drugs as of the psychology of human nature; the best answer to criticism of this kind would be found in the issue of the new Pharmacopœia. He went on to deal with the old fallacy, which dies so hard, that a panel patient is debarred from having the same range and quality of drugs as the private patient, and that an insurance doctor who prescribes the best for his patients will be admonished and surcharged. The panel patient, he said with emphasis, may have anything necessary for his proper treatment; but it is unfortunately true, he added, that the medical student has little opportunity for acquiring a knowledge of the values of remedies before he engages in practice, and it is as easy to be extravagant in prescribing as it is in eating or drinking. Nevertheless, out of 14,840 doctors issuing prescriptions last year under the National Health Insurance Acts, only four were surcharged for excessive prescribing.

In his presidential address to the West London Medico-Chirurgical Society last week, the sub-title of which we have taken for this article, Dr. JULIUS BURNFORD made a comprehensive survey of therapeutics, past and present. Consider, he said, how man must have suffered since he began to take notice of his ills and to trust to others for relief. Consider how through the ages he has been physicked; what an experiment in tolerance! And he went on to cite all the various sources from which medicine in the ages had drawn its stock of drugs and remedies. Treatment had followed treatment in endless stream and variety, though, as if to remind us that there is nothing new under the sun, old treatments were apt to reappear in is advised that, if the patient refuses to make the statement, the doctor is not legally obliged to pursue the matter further. They observe that, if the patient dies, the doctor should refuse to give a certificate of the cause of death, and should communicate with the coroner. This last observation will now, of course, be read in conjunction with the 1926 legislation and the consolidated Regulations of 1927 as to death registration; under Part IX. of the latter the registrar reports to the coroner any death which appears, from the contents of the medical certificate, to have been due to abortion. The resolutions of 1916 went on to emphasise the legal position by declaring that the doctor is under no legal obligation either to urge the patient to make a statement, or, if she refuses to do so, to take any further action. It is significant that this statement of the legal position was submitted to the Director of Public Prosecutions before publication, and is understood to have had his complete approval.

If the resolutions of 1916 are taken to represent organised medical opinion, independent medical writers have expressed their own hesitations. Although it is no part of a doctor's duty to act as an auxiliary policeman, is it any part of his duty to screen a professional abortionist? Lord RIDDELL, admirably summing up the problem in the volume already cited, remarks that the practice of abortion has greatly increased since the resolutions were passed. He asks whether, apart from legal obligation, the medical profession is justified in helping to conceal acts of this nature especially where the case is one of a series performed by the same abortionist. The answer seems to depend on the strength of public opinion, whereon ultimately the law itself and its enforcement are founded. Since Lord RIDDELL's book was published in 1929, judicial utterances have shown that the law itself is uncertain. What obligation can there be upon the doctor to aid in bringing an abortionist to justice if the judge holds that a charge of criminal abortion is an obsolete anachronism? If some of our judges think this and others think the opposite, the legal consequences of medical secrecy are a mere gamble.

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JUVENILE TUBERCULOSIS: A SCOTTISH INVESTIGATION

THE gaps in our knowledge of tuberculosis in childhood are gradually being filled up as diagnosis becomes more accurate. Clearer knowledge is leading to more precision in defining our terms. L. COBBETT has pointed out, for instance, how the old phrase tabes mesenterica, which used to figure so largely in practitioners' death certificates, has declined in frequency during recent years, doubtless in favour of a more accurate terminology. A monograph published this week[1] goes a long way toward closing the gaps still further. Dr. BLACKLOCK has made full use of his opportunities as pathologist to the Glasgow Royal Hospital for Sick Children in an exhaustive study of the tuberculous lesions, obvious or suspected, in a series of 1800 consecutive autopsies at the hospital during the years 1924–31. He has thus made it possible to collate the figures for Glasgow and the West of Scotland with those previously obtained for Edinburgh and the East, and afforded a basis for checking the figures already available from America, England, and Germany. Dr. BLACKLOCK's work helps, too, to define the differences between tuberculosis of childhood and tuberculosis of the adult. And last, but by no means least, the details of his post-mortem records provide material, extremely valuable to comparative pathologists, for comparison with the data set out[2] by Dr. H. H. SCOTT as a result of observations on the children of non-immunised Chinese at Hong-Kong and of higher apes in the London Zoo.

After determining the bacteriological type of the tubercle bacilli isolated from cases at autopsy—both those dead of tuberculosis and those dead of other causes—and from cases of surgical tuberculosis still alive, Dr. BLACKLOCK concludes that 37 per cent. of the bacilli are of the bovine strain, a finding which leads him to the conclusion that bovine tuberculosis is more prevalent in Scotland than in England or on the continent. Out of the total number of 1800 cases investigated post mortem, 283 showed tuberculous lesions, and in these 173 (61·1 per cent.) were considered to be due to a primary infection of the thoracic tissues. Wherever this primary lung lesion was found, only bacilli of the human type were obtained, whereas there was a high incidence of bovine strains in *primary abdominal lesions*. The high preponderance of bovine strains in abdominal lesions will excite no surprise, but the total absence of bovine strains from the thoracic lesions in the Glasgow autopsies is of considerable interest in view of the recent figures—chiefly in young adults—given[3] by W. T. MUNRO at Fife and Kinross Sanatorium in the East of Scotland. Of 28 cases of cervical adenitis, 10 yielded human and 18 bovine strains, a percentage of bovine origin lower than that found in most other investigations of Scottish children, but again higher than English and continental figures. A similar result was obtained with bone and joint tuberculosis, affording strong evidence that in Scottish children there is a special prevalence of bovine infection. In his large experience of autopsies upon adults in Glasgow, Dr. BLACKLOCK has rarely found evidence of healed infantile damage, and this fact leads him to the conclusion, contrary to the views expressed in other parts of the world, that it is exceptional for a dormant infection received in childhood to flare up later. But he also finds that pulmonary tuberculosis in young children in the West of Scotland is nearly always fatal—as indeed it is reputed to be elsewhere. Is it not possible, therefore, that there are but few survivors to break down in adult life? Dr. BLACKLOCK finds it difficult to explain hæmorrhagic tendency can be counteracted by transfusion or injection of normal blood. This has been the method of treatment of hæmorrhagic disease of the new-born for many years, and it is extremely rare to find a case that does not respond rapidly to one or more injections. Heffernan[3] has for the past four years given prophylactic injections of maternal blood routinely to every baby immediately after delivery, and reports a series of 800 cases. These include normal, low and high forceps, and breech deliveries, and 68 cases of Cæsarean section. Of the mothers 148 suffered from toxæmia; and there were 46 premature births. No case of hæmorrhagic disease occurred, and the mortality-rate during the first ten days was 2·5 per cent., or 1 per cent. excluding those born before the seventh month. Four infants developed symptoms indicating intracranial hæmorrhage and subsequently recovered. In carrying out the treatment 20 c.cm. of blood was taken from the antecubital vein of the mother and injected into the loose areolar tissue of the infant's infrascapular regions, 10 c.cm. on either side. No suppuration or anaphylactic reactions were observed, and the blood was absorbed in 24 to 36 hours. While the number of cases treated is not large enough to prove the value of prophylactic injection as a routine, the low incidence of hæmorrhage of any severity in the series is striking. The procedure is apparently harmless, and might well be adopted at least in those cases where there are any factors predisposing to hæmorrhage, especially prematurity, maternal toxæmia, or prolonged or difficult delivery.

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[1] Tuberculous Disease in Children: its Pathology and Bacteriology. By John W. S. Blacklock. Medical Research Council, Special Report Series No. 172. London: H.M. Stationery Office. Pp. 155+23 plates. 3s.

[2] See THE LANCET, 1930, ii., 1249.

[3] Edin. Med. Jour., 1930, xxxvii., 141.

ELECTRO-COAGULATION OF THE TONSILS

THE destruction of the tonsils by diathermy is the subject of an important contribution by Mr. R. Graham Brown,[1] of Brisbane. In his view, more or less satisfactory results are being obtained by those experts in throat surgery who are endowed with the requisite dexterity and who have a knowledge of the diathermy current. But he deplores the fact that many practitioners throughout Australia have been persuaded to buy diathermy apparatus in the belief that the difficulties they had experienced in the surgical treatment of diseased tonsils would be eliminated, and that a few simple coagulations with a diathermy needle would be effective. Far from this being true, Mr. Graham Brown holds that it is even more difficult to treat tonsils by surgical diathermy than by dissection. He quotes the following among the incorrect statements which are made by interested parties: that the tonsils can be completely removed without inconvenience or loss of time to the patient in three, four, or five sittings; that the coagulation and its after-effects are painless; that, although portions of the tonsil may remain after treatment, these portions are sterile; that the remains (which apparently are tonsillar) are generally nothing more than granulation tissue; that coagulation by diathermy does not lead to "bottling up" of the crypts. Mr. Graham Brown relates in detail a series of seven cases, previously treated by diathermy coagulation, which exemplified certain types of focal infection, and subsequently had to be surgically enucleated. These cases demonstrated the inaccuracy of the statements quoted above; several afford striking instances of increased toxæmia resulting from the bottling-up of septic material beneath the diathermy scar. Mr. Graham Brown is satisfied that total removal can be performed almost painlessly, and with practically no subsequent discomfort, provided that little destruction is done at each sitting, and that a degree of patience is exercised which is seldom found in patients and still less in surgeons. But he is emphatic in his opinion that, especially in the small buried type of tonsil, no treatment short of complete removal should be advocated for fear of greatly increasing the septic absorption from these structures. He has performed a useful service in making it clear that the method is a difficult one, which requires special skill, and often a very prolonged course of treatment, and that it is far from being an easy short cut to the desired end of complete extirpation of the septic tonsil.

AMAUROTIC FAMILY IDIOCY

A REPRINT has reached us of a long article on the juvenile variety of amaurotic family idiocy published last year by Dr. Torsten Sjögren.[1] It constitutes a valuable addition to knowledge in respect of a rare nervous disease which seems to occur with greater frequency in Sweden than elsewhere. Dr. Sjögren describes as many as 39 personally observed cases—in all probability more than any other worker has ever seen; and with this rich material at his disposal he is able to supply a clinical analysis that has never been approached. We are given detailed tables relating to inheritance, time and mode of onset, and other clinical peculiarities; the material is handled also from the viewpoint of familial and geographical distribution, ætiology, and pathogenesis. Its pathology did not come within the scope of this research. As a result of his investigations Dr. Sjögren concludes that the disease is distinguished by a more or less regular clinical syndrome and evolution; attention is directed particularly to the changes in the fundi, the epileptic fits, and extrapyramidal symptoms, such as hypertonus and other defects of motility. From a Mendelian point of view the condition seems to have the characters of a recessive; in this respect its heredofamilial features differ from those of the infantile variety. Other questions of interest are discussed in the monograph, which contains a full bibliography and is well documented.

AN INDEX TO PROGRESS IN SEVERE INFECTIONS

THE value of the sedimentation rate of the red cells in enabling the course of pulmonary tuberculosis to be followed and the response to treatment to be gauged has long been recognised; recently Dr. W. W. Payne drew attention[2] to its use in determining the latency or activity of rheumatic infection in children; but in this country, at any rate, it has hitherto played little part in general clinical medicine. Dr. J. W. Cutler,[3] of the Henry Phipps Institute of the University of Pennsylvania, as the outcome of a long series of observations, concludes that this procedure is capable of affording much more help than has hitherto been recognised. The nature of the phenomenon remains a mystery, but Dr. Cutler regards it as proven that an increase in the rate is associated with any condition in which there is increased tissue breakdown, and that the rate affords a correct indication of the degree of this breakdown. The test could thus give no help in the diagnosis of any particular morbid condition, but is capable of affording an index to progress more new guises; nevertheless, with each revival there comes a more scientific rationalism. He dwelt on the inherent difficulty in judging of the effect of remedies; how tolerance on the one hand, and the tendency to recover without treatment on the other, combined to render difficult and uncertain the assessment of any line of therapy. Nor is the living organism comparable with the machine in the accuracy of its working; rational therapy has always to contend with the many variants of the living organism. Of the final efficacy of treatment he regarded the patient as the best judge; in so far as the doctor retained the trust of his patient, he must have attained to some success. The patient, it is true, had much faith in the bottle; but in the main, he thought, we had passed the borders of empiricism. The discovery of opium, for instance, was empirical, and, as we are still ignorant of its action, empirical it remains. The same was no longer true of cinchona bark, for the advances of protozoology and the discovery of the active parasite and its life-history had led to a determination of the exact lethal activity of quinine. But even now we did not know whether EHRLICH'S "606" acted directly on the spirochæte or indirectly through a tissue reaction. Sometimes enthusiasm for a new line of treatment may have led to a forgetfulness of the fact that the whole individual is disordered in a disease. In an otherwise fertile era of post-mortem study of disease advance was held back by focusing attention on end-results; living pathology had carried us a stage further in the recognition of early processes and the searching out of ætiological principles. But our modern therapeutics might at times be doing injustice by not incorporating the experience of the past. At this stage Dr. BURNFORD surveyed briefly the whole field of modern treatment, concluding with a salutary consideration of its failures. Our therapeutic armamentarium may now be great; how much of it will stand for all time? We are acting according to our lights, and hence rationally by that same view; but let us in all humility remember that the witch or the priest chanting incantations acted just as rationally in the light of their own day.

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[1] Med. Jour. Australia, July 2nd, p. 1.

[1] Hereditas, 1931, xiv.

[2] THE LANCET, 1932, i., 74.

[3] Amer. Jour. Med. Sci., 1932, clxxxiii., 613.

ANNOTATIONS

TAXATION OF COD-LIVER OIL

A LEADING newspaper last Sunday, in dismissing opposition to the Ottawa agreements, remarked that even the dissenting Liberals cannot be exactly stirred to the depths by the reflection that their cod-liver oil will cost them more. The medical profession is hardly likely to share this light-hearted view of the proposed duties. Year by year it is made clearer that the diet of the poorer classes—if not the richer—is not the "balanced diet" advised by the text-books. Report after report, on rickets, dental caries, maternal mortality, or infectious disease, emphasises the importance of plenty of fresh foods or (if these are too expensive) of cod-liver oil, during infancy, childhood, pregnancy, or convalescence. In cod-liver oil we have a cheap and plentiful source of vitamins A and D; its more general use might go a very long way towards supplying the dietary deficiencies by which industrialism and poverty damage the national health. The taxation of bread would cause little perturbation among dietitians, for under present circumstances even the poorest people would still obtain it through work or charity. It is otherwise with the protective foods—milk, butter, eggs, fruit, and vegetables—which are the first to be sacrificed in time of hardship. It is at such times that cod-liver oil is most required to counteract the evils of an excessively cereal diet; and if steps could be taken to increase, perhaps tenfold, the consumption of cod-liver oil by children and young persons, something definite would have been done to counteract the effects of the present depression. It is the fear of an opposite tendency that causes us anxiety. Arguments about the actual result of the proposed tariff are complex, and the suggestion is repeatedly made that even a 50 per cent. duty could easily be borne by the middlemen and distributors who at present absorb most of the proceeds of sale. Into this economic and commercial argument we do not propose to enter. But we say emphatically that any measures which did in fact reduce the sale of cod-liver oil in this country would be contrary to the public good.

PREVENTION OF HÆMORRHAGE IN THE NEW-BORN

THOUGH mortality in the first two years of life has been greatly reduced during the present century the proportion of infants dying before the tenth day is still very considerable. And this remains true of countries where sepsis and infantile tetanus can be held responsible for very few of the neonatal deaths. Analysis of the available pathological material in many series of autopsies on new-born babies has indicated intracranial hæmorrhage as a common cause of death. Thus B. Fisher[1] noted hæmorrhages visible to the naked eye in 65 per cent. of the brains of 500 infants, and a similar finding was reported in our columns by J. N. Cruickshank[2] in 200 examinations. When it is considered that for every fatal case of intracranial hæmorrhage there are probably many cases of minor hæmorrhage which may or may not cause permanent damage to the nervous system, the importance and frequency of the condition may be realised. R. J. Heffernan[3] has estimated its incidence as high as even 20 per cent. in all new-born babies. The cause of the hæmorrhage appears, as a rule, to be intrinsic rather than extrinsic. It is true that in a certain number there will be found gross damage to the intracranial tissues (such as a tear of the falx cerebri or the tentorium cerebelli), and that death has followed a difficult labour or faulty obstetrics; such fatalities can only be eliminated by improved obstetric technique. There remain, however, the great number of cases where delivery has been easy and the labour in every way normal. In these hæmorrhage appears to be due to the innate tendency of the new-born infant to bleed. It is by no means clear which elements of the blood or vascular system are responsible, since it is found that either bleeding-time or coagulation-time, or both, have a tendency to be prolonged in the new-born infant, whilst even in true hæmorrhagic disease of the new-born the findings are not constant. It is, however, certain that the most marked), the basal ganglia, optic thalamus, and dentate nucleus. Prof. de Lange's studies have been very exactly carried out and, in particular, so that no confusion should arise, attention has been directed to the appearances of the various areas of the brain in normal infants. In this way it is possible to assert that much of the existing work of the histology of the nervous system in pink disease is unsatisfactory, and the present findings are in accord with the careful studies of W. G. Wyllie and R. Stern and of D. Paterson and J. G. Greenfield in this country in which a small-celled infiltration, believed to be of glial origin, was reported. The patient, in this instance, was a boy nearly a year old, and death was sudden, associated with an alarming acceleration of the pulse. This increased frequency of the pulse, especially in fatal cases, is a feature of pink disease requiring further elucidation. Changes have been described in the vagus nerve and Dr. Gertrud Steinbach[2] describes a case in an older child where electrocardiographic records were made. The patient was a boy over six years old, who presented a fairly typical picture of pink disease with photophobia, nasal catarrh, apathy, lassitude, severe sweating, loss of weight, and the characteristic appearances of the hands and feet. The pulse-rate varied between 160 and 180 per minute, keeping just as rapid during sleep. An electrocardiogram made at this time showed undoubted evidence of myocardial damage. In all three leads the R S T complex was altered considerably. Indeed, the form of the S-wave is believed to be unique, while the T-wave was inverted in leads I. and II. Four months after the beginning of the illness there was definite improvement in the general condition, the pulse was less than 100, while the electrocardiographic changes showed only a slight return towards normality, and changes of a pathological nature still appeared to be present. Since the prognosis is usually good in pink disease, save for the cardiac complication, these studies are of interest and suggest further investigation, perhaps in other centres.

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[1] Schweiz. med. Woch., 1924, liv., 905.
[2] THE LANCET, 1923, i., 836.
[3] New Eng. Jour. Med., August 18th, p. 293.

IS FATAL HEART DISEASE ON THE INCREASE?

IN his Statistical Review of England and Wales for 1926, the Registrar-General concluded that "alarmist pronouncements as to increase of mortality from heart disease by 'the stress and worry of modern life'" were not founded on fact, and could indeed be met by the observation that it is declining at all periods of life. The increase in the *crude* mortality (about 13 per cent. between 1911–20 and 1926) is due to two factors: (1) the ageing of the population—standardised rates and rates at ages show decreases; and (2) the "rapidly growing tendency to record cardiac degeneration in certifying deaths of old people formerly ascribed simply to such causes as 'old age,' bronchitis, &c." That the "appalling increase" in the mortality from heart disease observed in the United States is probably equally fictitious is shown in a recent paper issued by C. F. and N. W. Bolduan from the Department of Health of New York.[3] The registered increase in heart disease in New York City has been accompanied by a registered decrease in apoplexy, Bright's disease, and deaths charged to senility. In New York City the efforts of the registrar of records have, it is stated, reduced the deaths charged to senility from 35 per 100,000 of population in 1900 to less than two in 1930, and well over one-half of these deaths are now comprised under the comprehensive heading "cardio-arterio-renal disease." A consolidation of these registered forms of death (apoplexy, acute and chronic heart disease, arterial disease, nephritis, and senility) shows, in spite of the ageing of the population, a practically constant death-rate for cardio-arterio-renal disease over the period 1900 to 1930. Only at ages 65 years and over is there any signs of an increase, and even this increase is slight. At all other ages a distinct fall in mortality is noted. The registered mortality from "heart disease" alone is therefore fallacious; this is the conclusion of these authors, and it is a conclusion which seems well founded. The pathological changes and the ætiological factors in heart disease are not limited to the heart, but include also the arteries and kidneys. Fashions of certification, improving accuracy, and methods of classification of death may play a large part in influencing the recorded mortality in the elements of this group of causes. The great prevalence of cardio-arterio-renal disease presents a very important health problem, which certainly requires no exaggeration by fallacious figures.

CARAVANS

WHAT is locally described as the caravan menace is becoming quite serious along certain parts of the Sussex coast. Small caravan towns, with a population of holiday-makers and week-end dwellers, have sprung up here and there on the outskirts of popular resorts and in places are said to be destroying the amenities of the district. What is considered more important is the fact that these settlements have no sanitary arrangements and may become centres of infection. Faced with this situation, the rural authorities are seeking Parliamentary action, led by the Westhampnett rural council which has in its midst caravan settlements at Aldwick, Selsey, Middleton, Felpham, and the Witterings, all of which are by the sea. The authorities are invoking the assistance of the West Sussex County Council in promoting a Bill giving the same powers as were given to the Surrey County Council in its 1931 Act. Power is needed to regulate the uses of all land bordering on the sea-shore. Many farmers are profiting by letting their fields to caravaners, and although the fields are exempt from rates under the De-rating Act when they are used exclusively for the purpose of agriculture, the rating exemption can be forfeited by devoting the land to another purpose. It then becomes assessable, as in ordinary cases, on the basis of the value to a hypothetical yearly tenant. The local authorities, it appears, are bringing the question to an issue by assessing the farmers. Several of the large towns on the south coast already have powers to check the caravan menace.

EARLY DIAGNOSIS BETWEEN AMŒBIC AND BACILLARY DYSENTERY

Dr. John Anderson[1] writing of the differential diagnosis of dysenteries in the Eastern Mediterranean during the late war noted that early cases of amœbic could be distinguished from bacillary by the microscopical examination of the stools, even if amœbæ could not be seen. In amœbic dysentery, he found, red cells were nearly always present, and apt to be clumped; the eosinophils were much increased; the polymorphs were digested and reduced to pyknotic nuclei, owing to a proteolytic process at work;

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[2] Ibid., p. 208.

[3] Jour. of Prev. Med., July, 1932, p. 321.

[1] THE LANCET, 1921, ii., 998.

accurate than any hitherto available. Dr. Cutler uses a type of sedimentation tube devised by himself, which holds 1 c.cm. of blood and is graduated into 50 divisions of 1 mm., each corresponding to 0·02 c.cm. of blood. Readings are taken over an hour at intervals of five minutes. Four distinct types of graph are recognised: an almost horizontal line, a diagonal line, a diagonal curve, and a curve approximating to the vertical; the first alone is normal; the remaining three indicate increasing degrees of intensity in the morbid condition. Dr. Cutler finds that the sedimentation rate is increased in all chronic and acute infections, in local suppuration, in acute intoxications, and in certain endocrine disorders, such as thyrotoxicosis. It is only slightly influenced by simple catarrhal inflammations, and not at all by functional or mental disorder, allergic conditions, simple neoplasms, or chronic valvular disease of the heart. While the test may have some value in establishing a differential diagnosis, particularly where a neurosis is suspected, its principal value lies in the aid which it affords in following progress. Dr. Cutler cites several examples of malignant disease and of pulmonary tuberculosis in which the sedimentation rate by indicating progress of the disorder appeared to belie the clinical course; in every case, the evidence of the test proved in the long run to be correct. The only physiological condition associated with increase of the rate is pregnancy, in which there is a steady increase from the second month on to parturition.

SPINAL ANALGESIA: THE CAUSES OF DANGER

MUCH controversy has raged round the question of how the fall in blood pressure and the respiratory depression which sometimes dangerously complicates endothecal injection of anæsthetics are brought about. Perhaps the most commonly accepted view has been that paralysis of many vasoconstrictor fibres led to splanchnic dilatation and "pooling" and that the drop in blood pressure was due to this and that respiratory depression followed secondarily. The matter has been experimentally investigated recently by researches carried out in the University of Wisconsin[1] to study the relationship between oxygenation of tissues and the maintenance of good cardiovascular function during spinal analgesia. The authors start with the thesis that three mechanisms may be involved in the respiratory paralysis which they regard as the usual cause of death on the table from spinal anæsthesia. These are: (1) Direct action on the respiratory centre by diffusion of the drug to the fourth ventricle in paralytic concentration. (2) Ascending block of the intercostal and phrenic nerves. These two may be arrested by proper dosage and technique. (3) Insufficient nutrient flow of blood through the central respiratory mechanism secondary to cardiovascular depression. This depression, they say, is attendant on every intradural block involving the upper part of the abdomen and thorax. As the integrity of the respiratory centre depends on an adequate volume of sufficiently oxygenated blood the depression is responsible for most cases of respiratory failure. Experiments on dogs do not substantiate the view that paralysis of the splanchnic nerves with subsequent pooling of blood in the abdominal region are the principal if not the only factor involved in the circulatory depression. Loss of skeletal muscle-tone, which accompanies any intradural block, removes an element essential for the maintenance of a stable capillary and venous bed. The authors hold that it matters little practically whether paralysis of splanchnic nerves, or of vasoconstrictors to the skin and to other vessels of the trunk and extremities, or loss of skeletal muscle-tone is the principal factor. The important fact is that a marked decrease in peripheral resistance to blood flow occurs in the region involved in the block. Grave cardiovascular changes occur only in blocks that involve the chest. Two important factors must be considered: additional paralysis of vasoconstrictor fibres and intercostal nerve paralysis. The integrity of the medullary centre and heart is dependent on adequate supply of oxygen. The additional anoxæmia accompanying partial or complete thoracic paralysis may be disastrous. The main contention of their thesis is that the oxygen needs of the body are not adequately met, owing to a reduced volume flow of blood and a decreased gaseous exchange in the lungs proportional to the lowered thoracic excursion. Experimentally the efficiency of respiration, thoracic excursion, and minute volume exchange decreased in blocks involving the thoracic region and the decrease is proportional to the height of the block. Compensation by increased diaphragmatic activity may occur in the low thoracic blocks. This reactivity of the diaphragm is hindered in the Trendelenburg position. Studies of the alveolar and blood oxygen and carbon dioxide both in man and dogs gave the authors further evidence of the decrease of pulmonary ventilation in blocks involving the thorax. They drew the practical conclusions that to combat cardiovascular collapse there should be judicious use of inhalation of oxygen throughout the surgical procedure, prophylactic administration of ephedrine, a moderate Trendelenburg position, and administration of fluid while blood-vessels and heart still maintain their physiological integrity. Artificial respiration with undiluted oxygen is to be practised when there is impending circulatory or respiratory failure and post-operative hyperventilation of the lungs with carbon dioxide periodically throughout the first 24 hours after operation.

STUDIES IN PINK DISEASE

THE story is told of a French physician, visiting a well-known children's hospital in London, who asked an English colleague, after a case of "erythrœdema polyneuritica" had been demonstrated, "qui est ce monsieur Pink?" It is not only in France that the name of pink disease is unfamiliar, but fortunately its characteristics are now more widely recognised, and detailed studies of the condition are being made at various centres. Prof. Cornelia de Lange,[1] of Amsterdam, for instance, has lately described an investigation of the central nervous system from a patient whose brain and spinal cord were sent her by Dr. J. C. Spence of Newcastle-on-Tyne. Briefly, the findings in this case were a slight increase of neuroglial tissue in certain parts of the brain, in areas this being collected together into small "glial nodes." There was nowhere any evidence of change in the neuronic elements and no sign of any inflammation except for a small localised area of meningitis over the left frontal area, only discovered on careful microscopical research. No changes were found in the spinal cord, and in the brain the principal areas showing this increase of glial tissue were the tubero-infundibular region (where the glial nodes were

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[1] From the departments of pharmacology and anæsthesia of the University. Jour. Amer. Med. Assoc., Sept. 17th, p. 961.

[1] Jahrb. f. Kinderheilk, August, 1932, p. 193.

POST-GRADUATE LECTURES

THE following abstracts are from post-graduate lectures delivered in connexion with the special short courses recently held at Charing Cross (Mr. Norman Lake), St. Mary's (Mr. Herbert Tilley), Middlesex (Mr. E. W. Riches), and King's (Dr. J. L. Livingstone).

THE SURGERY OF THE SYMPATHETIC NERVOUS SYSTEM

(MR. NORMAN LAKE)

MODERN interest in the sympathetic system may be said to date from the pioneer work of the English physiologists, Langley and Gaskell. The former included in his "autonomic system" two distinct entities working more or less in opposition—the sympathetic proper, consisting of the central sympathetic cords and ganglia, together with certain peripheral ganglia; and the parasympathetic, consisting of fibres associated with somatic nerves, those from the third cranial passing to the ciliary ganglion, visceral branches of the seventh, ninth, and tenth cranials, and the pelvic branches of the second, third, and fourth sacrals. Langley's conception in its main outlines still gives us the most acceptable working hypothesis upon which to base our studies. While surgical attack has been made upon the parasympathetic side of the system, the majority of operators concern themselves with the sympathetic proper.

Put briefly, the function of the sympathetic system is to prepare the organism for offence or defence, and to inhibit such functions as are not immediately concerned in this protection. Thus, the heart is accelerated and its output increased, the cutaneous vessels are contracted, so passing more blood to the muscles, sweat glands are stimulated, the hair is erected, and the pupil dilated. Peristalsis and secretion of internal viscera is inhibited, but the sphincters are contracted; there is chemical mobilisation of materials essential to a ready supply of energy, and increased function of certain endocrine glands such as the adrenals. Afferent fibres convey impulses from the viscera into the central nervous system, giving rise to that rather vague and diffuse sensation recognised as visceral pain.

The anatomy of this system is too complex to allow of a brief summary, but as a result of experimental and surgical study considerable advances have been made during the past ten years in our knowledge, not only of the anatomical details, but also of the functions of the fibres.

The first deliberate surgical attack upon the sympathetic system was apparently that of W. Alexander, of Liverpool, who excised the superior cervical ganglion for epilepsy; ten years later, in 1889, Jonnesco excised the whole cervical cord for the same condition, and a little later Jaboulay and Jonnesco attacked the cervical sympathetic in cases of exophthalmic goitre. In 1915 Leriche introduced his operation of peri-arterial sympathectomy, and, although this operation has since been shown to be founded upon a mistaken anatomical basis and as a result has been largely discredited, it served to arouse an interest in the possibilities of sympathetic surgery which has not waned since. In 1916 Jonnesco operated upon the cervical sympathetic for the relief of pain in angina pectoris with apparent success. Eight years later Hunter and Royle, in Australia, suggested the operation of lumbar ramisection in the treatment of spastic paraplegia. This operation, also established upon an unsound anatomical and physiological basis, was soon discarded for paraplegia, but every surgeon who performed it was impressed by the very marked vascular change which occurred in the affected limbs, and to which any improvement was almost entirely due. As a result, the possibility of relieving vasospastic conditions by this means was rapidly appreciated and put into practice.

At the present day the following diseases are treated by attack upon the sympathetic system, chiefly the division of the vasoconstrictor fibres, or better, the complete removal of that portion of the chain and its ganglia from which they arise: Raynaud's disease, thrombo-angiitis obliterans (Buerger), scleroderma, Hirschsprung's disease, angina and other visceral painful crises, retinitis pigmentosa, the vasospastic type of rheumatoid arthritis (Adson), and, still more tentatively, causalgia, intermittent claudication, and some painful amputation stumps. Many of the vascular symptoms associated with cervical rib are of sympathetic origin and the removal of the rib should therefore be included in this list. The splanchnic block, so extensively used in abdominal surgery, is also an instance of temporary interference with the sympathetic system, while attempts are being made to achieve a more permanent block by the paravertebral injection of alcohol in appropriate locations, with a view to supplanting operative division, with its attendant risks, in cases, particularly, of angina.

My personal experience is limited to the use of the operations in cases of Raynaud's disease of both upper and lower extremities; for pre-senile gangrene; for spastic paraplegia; for Hirschsprung's disease; for causalgia, and, very tentatively, in an effort to modify the motility and secretions of the stomach. The results have, in the majority of cases, been sufficiently good to give reason for enthusiasm on the part not only of the surgeon but also of the patient, and careful tests of function in the various structures, before and afterwards, have amply demonstrated the change which has occurred. In general, it can be said that good results are to be anticipated in cases of Raynaud's disease, thrombo-angiitis obliterans, and Hirschsprung's disease, and that in each of these the degree of improvement can be estimated beforehand by blocking the sympathetic cord with local anæsthetic or, better, by the administration of a spinal anæsthetic. In the case of the other conditions mentioned the operations must be regarded, frankly, as being very much in the experimental stage, although they have given results of an encouraging nature.

In the case of angina the propriety of any operation to relieve the pain has been called into question, and is still the subject of considerable controversy. Obviously, if the pain be protective or warning in character operative division of the sensory fibres would be a mistake, although division of motor vasoconstricting fibres could not be subjected to the same criticism. Nevertheless, I believe it to be open to great doubt whether it is right to regard pain of visceral sympathetic origin as being a protective mechanism in the sense that most somatic pains are so regarded. However, the question bristles with difficulties, and it is impossible to enter into a discussion of it now; nor would it be of any real value, and there were few macrophages. In the bacillary stools, on the other hand, there were few red cells, eosinophils were rare, polymorphs were swollen and killed by toxic necrosis, and macrophages (intestinal epithelial cells) were a striking feature. These observations are now confirmed, 11 years later, by Prof. A. Alexieff,[2] of Batoum, who observes that it is not always easy to find *Entamœba histolytica* in the stools of early amœbic dysentery, but that if pseudopyknotic nuclei (Anderson's pyknotic) are present the diagnosis is certain; here he quotes Anderson in support. The diagnosis is clinched, he says, by the finding of Charcot-Leyden crystals and eosinophils, but they do not develop quite so early in the disease. He details clinical cases which support his view that the deeper the seat of infection, the more of these digested polymorphs there will be—many if the infection is submucous, few if it is superficial, for then the ferments of the amœbæ are diluted by the intestinal juice. The amœba, he believes, gives off a proteolytic ferment which dissolves the cytoplasm of the polymorphs, but acts less strongly on the nuclei. In a very severe case, he found 85 per cent. of these pseudopyknotic nuclei, and notes that the similarity between his figure and Anderson's 83 proves the severity of the cases Anderson was concerned with. Alexieff gives drawings of the gradual release of the nucleus of the polymorph, and concludes that the presence of pseudopyknotic nuclei in the stools is the first recognisable sign of the presence of *E. histolytica.*

RECOGNITION OF FŒTAL DEATHS

IN reviewing the radiological signs of intra-uterine death Dr. Otto Brakemann[3] says that as many as 12 of these have been described by various writers. His own experience is based on an examination of 35 cases, and states that the best radiograms are obtained when the uterus is at rest, and, therefore, before the onset of labour and when the head is above the pelvic brim. A pathognomonic sign (first described by Spalding and Homer) is the overlapping of the flat skull bones, the frontal bones sliding under the parietals. Brakemann considers that an equally valuable and much earlier sign which he has encountered as soon as 14 hours after intra-uterine death is a step-like depression of the frontal and occipital bones below the level of the parietals without any overlapping. At the same time, the occipito-frontal diameter of the head is increased. A third sign is the triangular shape of the skull. Towards the occipital end the head is elongated into the form of an empty sac. The lamboidal sutures become widened, and in consequence the small fontanelle gapes widely. These changes are caused by the post-mortem softening of the cranial contents and cessation of the blood and lymph circulation, leading to decreased intracranial pressure, while the intra-uterine pressure of the liquor amnii on the fœtal head is maintained, at the same time as the membranes between the bones are softened. In twin pregnancy death of one fœtus can rarely be diagnosed with certainty apart from radiographic pictures which show the characteristic changes. Brakemann believes that in twin pregnancy the living fœtus can be endangered by poisonous substances emanating from its dead partner. This occurs especially if the partition between the two is torn; but it can, he thinks, happen also when the partition is intact, the injurious materials passing by osmosis from one amniotic sac to the other. He relates a case in which the death of one twin was diagnosed by X rays. Some time afterwards the mother went into labour; the living child presented by the breech and was born without difficulty, but only survived one hour. Post-mortem examination failed to reveal any cause of death, and he concludes that it had been poisoned by the passage of noxious material from the dead twin. On this account he advocates the termination of pregnancy for the sake of the living twin in cases where death of one fœtus has been demonstrated radiographically.

Sir George Newman will deliver the Harveian Oration of the Royal College of Physicians of London at 4 P.M. on Tuesday next.

Dr. Carl Prausnitz, professor of hygiene in the University of Breslau, is giving the Heath Clark lectures at the London School of Hygiene and Tropical Medicine, next week. His subject is the Teaching of Preventive Medicine in Europe, and Sir George Newman will take the chair at the opening address on Monday the 17th, at 5 P.M. The lectures will continue daily at the same hour until the 21st, and no ticket is required for admission.

THE Semon lecture for 1932 will be given by Prof. Otto Kahler of the University of Freiburg, at the house of the Royal Society of Medicine, 1, Wimpole-street, W.1, at 5 P.M., on Thursday, Nov. 3rd. Mr. E. Musgrave Woodman will take the chair, and the subject of the lecture will be the Tonsil Problem.

THE British Congress of Obstetrics and Gynæcology will meet in Birmingham from April 19th to 21st, 1933, the main subject of discussion being the Mechanism of Uterine Action and its Disorders. The hon. secretary is Mr. W. E. Barnie-Adshead, 89, Cornwall-street, Birmingham.

THE annual dinner of the Royal Society of Medicine will be held at the May Fair Hotel on Thursday, Nov. 17th, at 7.30 for 8 P.M. The guests will include Sir Thomas Barlow, Sir Hilton Young, and Sir William Rothenstein.

ROYAL MEDICAL BENEVOLENT FUND.—At the September meeting the committee voted 69 grants, amounting to £1421, as compared with 31 grants, amounting to £577, at the September meeting in 1931. The following are particulars of a few cases helped:—

Widow, aged 65, of M.R.C.S. Since the death of her husband in 1906 she had enjoyed an income of £250 per annum paid from money left in trust. The trustee who had entire control of the trust has proved to be fraudulent and is now in jail. The widow's income has therefore suddenly and unexpectedly stopped as all securities have disappeared, and she is left penniless. Fund voted special gift of £20 and £26 payable in four instalments over one year.

Widow, aged 36, of M.R.C.S. Husband died at the age of 38, leaving widow with a yearly income of £33 and three children, ages 6, 4, and 2, to maintain and educate. The husband had a distinguished war service, received the D.S.O. for outstanding courage, and paid for his medical education from what he received from the war. He was working as a medical officer on a salary of £500 per annum which was eaten up in the simple necessities of life. By his early death from phthisis his widow and three young children are left without means of support. Fund voted a special gift of £20 and £26 payable in four instalments over a period of one year.

M.R.C.S., aged 71. Applicant has [illegible] He is now totally incapacitated fr[illegible] the neck and arthritis. His wife has [illegible] last 40 years. Applicant's income was £96 per annum. He is obliged to employ help in dressing, walking, and general needs. Fund voted £10 payable in four instalments over a period of one year.

Cheques should be made payable to the honorary treasurer of the Fund, 11, Chandos-street, Cavendish-square, London, W.1.

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[2] Arch. f. Schiffs- u. Trop.-Hyg., August, 1932, p. 440.

[3] Münch. med. Woch., 1932, lxxix., 1079.

small and blocked nasopharynx hinders their profuse secretion from passing downwards into the lower pharyngeal regions.

I will henceforward confine my remarks almost entirely to the antrum as a frequent source of purulent nasal discharge, but it will be readily appreciated that as the other sinuses are not only in close anatomical relationship, but are also organically associated by a continuous ciliated mucous membrane. This has a practical bearing, in that neglect in the diagnosis and treatment of one infected sinus may sooner or later lead to involvement of its neighbours—e.g., it is a common experience to find apparently recent types of inflammation in the anterior ethmoidal cells and frontal sinuses associated with a similar but more chronic condition in the antrum.

Infection is, of course, due to bacteria, and it is generally of a mixed type in which staphylococci, streptococci, and pneumococci are in evidence, although either of these may predominate the others. In acute infections—e.g., influenza and the acute specific fevers—pure cultures of the invading organism have been obtained. If the pus has a foul odour, its dental origin should be suspected.

Acute inflammation of the maxillary antrum.—This is a frequent complication of an acute coryza, influenza, and the acute specific fevers. In such cases the infection passes from the nasal cavity into the antrum—and often involves the other sinuses which, by reason of their dependent drainage, tend to recover more quickly than the maxillary air cell in which the "ostium" is comparatively high up on its inner wall and is also covered by the swollen tissues of the middle turbinal. Another and not infrequent source of acute antral inflammation is the bursting into its floor of infective material from the apices of the roots of the second bicuspid and the first and second molar teeth.

The main symptom is acute pain in the cheek, often of a neuralgic type, and the patient will experience considerable tenderness if pressure be applied beneath the cheek on the anterior wall of the canine fossa. Sometimes the chief complaint is severe pain above the inner half of the corresponding orbit, but it does not necessarily imply that it is due to inflammation in the frontal sinus—in other words, it is a "referred pain," of antral origin. Transillumination of the antrum by means of a 4-volt lamp held in the closed mouth, and with the head covered by a dark cloth, will sometimes demonstrate that the suspected sinus does not show so clear an infra-orbital crescent of light as that on the normal side. (The small torch-light used for examining a throat will often suffice for this test.) You will now examine the nasal cavities, and first of all the healthy side, which will be fairly patent and covered with pale pink mucous membrane, while the suspected side would be obstructed by swollen congested mucosa and possibly a quantity of mucoid or mucopurulent discharge. If you spray on to, or apply to, the mucous membrane a 10 per cent. solution of cocaine and examine again in about five minutes, it may be possible to see the anterior regions of the middle meatus, wherein you may be able to detect a definite yellowish discharge. This will clinch the diagnosis in so far as antral infection is concerned. In cases of dental origin the symptoms are rather different, in that the patient will tell you that he had a bad toothache which suddenly passed off, and he then noticed a foul smell, and discharge from the nose from the same side.

In cases of intranasal origin treatment will be both general and local. The former will largely depend on the nature of the infection. If it is of influenzal origin, rest in bed will be necessary, and the pyrexia must be treated by ordinary remedies. Neuralgia and pain in the cheek will be greatly minimised by aspirin grs. 7, pyramidon grs. 3, salicylate of quinine grs. 2, codeia gr. ½, given in a cachet every four to six hours. Hot fomentations to the cheek are often very acceptable. It is most important to promote free discharge from the antrum. This can be much encouraged by applying beneath the anterior half of the middle turbinal a thin pledget of wool or gauze soaked in equal parts of 10 per cent. cocaine and adrenaline. If you can do this every three or four hours for at least a day, you may promote a drainage of septic material from the antrum and thus initiate a cure. What is still better is scarification of the anterior half of the engorged tissues of the middle turbinal and the adjacent meatus—it is often surprising how this local depletion adds to the patient's comfort, in addition to promoting freer discharge for the antral secretions.

If the antral trouble arises from a diseased tooth, this must be removed, the upper regions of the alveolus enlarged, and daily irrigation practised until the discharge ceases. The prognosis in such cases is good, and restitution should be complete in ten days to a fortnight.

Chronic antral suppuration.—Here let me repeat my warning that a patient's statement that he is suffering from "chronic nasal catarrh" often turns out to mean that the cause of the troublesome discharge is infection of one or more of the nasal sinuses. It will probably be a correct diagnosis if the symptoms are unilateral, because there is no such disease per se as a unilateral chronic nasal catarrh.

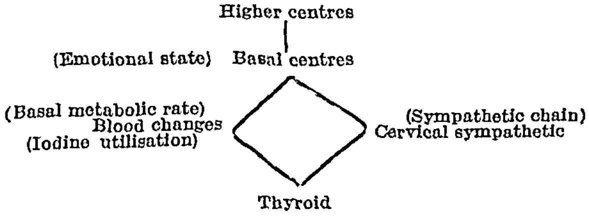
As a rule there are three predominant local symptoms: (1) A chronic yellowish discharge from the corresponding nasal cavity. It is often offensive, and particularly so if the antral infection be of dental origin. (2) Some degree of nasal obstruction. (3) Headache, generally supra-orbital, worse in the earlier hours of the day and wearing off about midday. The general symptoms may be merely those indicative of a mild toxæmia—e.g., never feeling fit, unrefreshing sleep, or lack of concentration on work. In other instances, digestive disorders are complained of, a fact not to be wondered at when one remembers that an ordinary adult antrum will hold at least an ounce of pus, and a considerable quantity of this would be unconsciously swallowed.

"Chronic laryngitis," "bronchial catarrh," and asthma are not uncommon symptoms resulting from the passage of septic organisms into the lower air passages. In all patients who suffer from recurrent pulmonary symptoms, mild or severe, it would be wise practice to make sure that the focus of infection does not lie in the nasal sinuses. The same would be equally true when looking for the cause of fibrositis, neuritis, and arthritis. It is interesting to notice the excellent work which during the past few years has been carried out by Drs. Graves and Pickworth and Watson-Williams, bearing on the relationship between mental disease and septic infections of the nasal sinuses. In many instances these septic psychoses—as Dr. William Hunter has termed them—have been cured by removing the source of infection.

Diagnosis will demand a close inspection of the middle meatus of the nose, and if pus is to be seen there you will have first to decide if the antrum is infected. Transillumination, as already described, may show an absence of the infra-orbital crescent of for what the practitioner wants to know is what class of disease to refer for surgical treatment, with reasonable hope of amelioration or cure, and I hope that the answer to that has already been made sufficiently clear. Of the future it is difficult to say much. Our knowledge of the distribution and working of the sympathetic system is still very imperfect, and intelligent anticipation of possibilities is correspondingly limited. Prophecy, without substantiation, is always easy, but alien to the scientific method, and imagination is apt to run riot when uncontrolled by a sufficient knowledge of the facts; yet, so great is the temptation, that, with full appreciation of these criticisms and warnings, I shall surrender myself for a brief moment.

The very clear association of certain organic changes with emotional states has long been recognised—exophthalmic goitre, mucous colitis, and atonic visceroptosis, to take three at random, have each their characteristic emotional state. The relationship between the two aspects of the disease have, in the past, been thought to be of a subtle nature, not capable of easy analysis. It may well be, however, that in the sympathetic nervous system we have a "mechanism" by which this relationship is effected, thus placing it upon an anatomical and physiological basis. The emotions are very closely related to the activities of the sympathetic system, may indeed be but the appreciation of the reflex responses of this system to appropriate incoming stimuli. Upon this thesis, therefore, the alteration in sympathetic response which produces the organic change must of necessity be associated with an emotional change, since it constitutes the physical basis of that emotion.

Such a viewpoint must change considerably our ideas as to the nature of these diseases, and may possibly lead to drastic alterations in the method of attack. It is beyond doubt that such a disease as exophthalmic goitre may be treated with success of varying degrees by the surgeon, the radiologist, the physician, and the psychologist, each with his individual ideas of the pathogenesis of the condition. Such an anomaly, however, becomes easier of explanation if we think of this disease as a circle, in which the basal centres of the brain, the cervical sympathetic system, the thyroid gland, and the blood form four segments. Thus, if there be any change in the response of the basal ganglia (the experimentally located centre of sympathetic activity), this will produce corresponding changes in the activities of the whole sympathetic system, including the glands which it controls—e.g., thyroid and adrenals—and this alteration will constitute the physical basis of an emotional change (the "emotional centre" also has been located in the basal ganglia). This circle is cut into by the surgeon when he performs a thyroidectomy, by the radiologist when he reduces the activity of the gland, by the physician when he attempts to neutralise the toxic thyroid secretion in the blood, by the psychologist when, by analysis, he affects the response of the basal centres; and finally Jaboulay and Jonnesco have both achieved some measure of success in the treatment of this disease by excision of part or the whole of the cervical sympathetic chain. This conception is perhaps best made clear by a graphic representation (see above) A similar relationship can be shown to exist in other physical diseases associated with emotional states. Is it too much to hope therefore that the sympathetic system will prove to be the link between physical and psychical, and that the surgeon's knife may thus have its repercussions upon the emotional state of the patients?



While this aspect of the subject interests surgeon and physician alike, the former may see in the sympathetic nervous system a means of altering the function of structures quite remote in its conception to the present-day surgery of direct mechanical attack Here we must add a further observation of great importance. It is possible that prolonged disturbance of function may produce definite organic changes, a thesis that is ably supported by the recent work of Telford and Stopford upon thrombo-angiitis obliterans where the well-known organic obliterative changes in the vessel wall are preceded by a primary functional spasticity dependant upon a sympathetic lesion.

If such "surgery of function" should eventually replace the clumsier methods of to-day the faltering attacks which we are now making upon the sympathetic system will not have been in vain.

PURULENT NASAL DISCHARGES

(MR. HERBERT TILLEY)

It is perhaps natural that those of us who confine our attention to diseases of the ear, throat, and nose are often surprised by the little attention which is given by members of our profession to such an obvious and common symptom as a purulent nasal discharge. I say "surprised" because we all know how many diseases are of septic origin, and can often be cured by the removal of the focus of infection.

For example, a patient complains of "chronic nasal catarrh"; if questioned he may say that it is chiefly on one side, and that sometimes he has noticed a streak of yellow in the discharge when he blows his nose. What happens? His throat is inspected and practically no examination made of the nasal cavities, but he is given a prescription for an alkaline nasal wash to be followed by a nebulised spray of an oily medium containing menthol or chloretone. So things drift on until some definite local or distal symptoms declare themselves, which call for a careful search for some hidden source of septic infection.

A purulent nasal discharge may be met with at all ages from the cradle to the grave. In the new-born child we are familiar with the condition in congenital syphilis or from some septic contamination during parturition. In children up to the tenth year, or even later, a foreign body should always be suspected if the discharge is unilateral, and particularly so if a little blood is sometimes mixed with the pus. Should examination exclude this possibility, the antral sinus will generally prove to be infected. In this connexion I would like to emphasise the fact that within recent years it has amply been proved that children are by no means exempt from infection of their nasal sinuses. A bilateral mucopurulent nasal discharge in those of tender years is one of the commonest symptoms of adenoids, for when these are mildly infected the (*b*) The cutting type, which employs a wire loop activated by a cutting current, and by means of which the tissue can be excised with little bleeding and without preliminary coagulation.

On general surgical principles the latter would appear to be the better type, for it leaves a minimal surface zone of dehydration on which healing readily occurs; whilst in the former type sufficient coagulation to prevent bleeding is likely to be followed by rather deeper necrosis which will provide a medium for the spread of infection. This objection is to some extent overcome in the Bumpus instrument, where the circular cutting punch follows accurately in the cylinder of tissue previously desiccated by multiple needle electrodes, and it is probable that resection can be more rapidly carried out by this type of instrument. I have preferred, however, to use the cutting type which, although it entails the removal of smaller and more numerous pieces, appears to leave a cleaner post-operative field.

The most modern of the cutting instruments is the McCarthy electrotome; it is essentially a modified posterior urethroscope. Vision is provided through a telescope giving a fore-oblique view, the field being kept clear by continuous irrigation. Hæmorrhage is slight, but any spurting vessel can be controlled by light coagulation with a ball type of electrode. The actual cutting mechanism consists of a wire loop movable to and fro by a rack-and-pinion movement and insulated from the rest of the instrument but connected with the source of diathermy. After the urethra and bladder neck have been examined, the loop is advanced to just beyond the obstruction, the ocular end is elevated, the current turned on, and the loop slowly withdrawn, during which movement it cuts through the projecting prostatic tissue. The piece, about an inch in length by a quarter of an inch in depth and width, usually adheres to the loop and is removed after each cut. When a sufficient amount of tissue has been removed, it should be possible to see from the verumontanum to the trigone of the bladder. Removal of the obstructing part only is aimed at, and the amount will vary therefore in different cases. A catheter is then inserted, the endoscopic tube withdrawn over it, and the catheter tied in; it is an advantage to use a self-retaining catheter of the Malecot or Pousson type.

Choice of operation.—In a purely glandular type of enlargement with considerable intravesical projection in an otherwise fit man an excellent result can be anticipated from suprapubic prostatectomy, and this is still the operation to be advised in such cases. In general, the larger the prostate the more suitable it is for suprapubic removal.

The selection of cases for per-urethral treatment depends on the local condition of the prostate and the general condition of the patient; as regards the local factor the operation gives most promise in the following types:—

1. Early glandular hypertrophy with only moderate intravesical projection.
2. Fibrous prostates.—After suprapubic prostatectomy convalescence is usually smoother in the glandular than in the fibrous cases; the same obtains after endoscopic resection, but to judge from the small amount of material at present available the latter is the more satisfactory operation.
3. Carcinoma.—Endoscopic resection can prevent or delay the necessity of suprapubic drainage with its attendant discomforts; it may have to be repeated.
4. Calculous prostatitis, if the infection can be controlled, should be more suitable for endoscopic resection than for suprapubic prostatectomy.

The general considerations are those which make suprapubic prostatectomy a hazardous procedure, such as cardiovascular or respiratory disease, extreme age or obesity; per-urethral methods are less hazardous, and the operation can be carried out under low spinal anæsthesia. In cases with impaired renal function, much cystitis, or acute retention, the preliminary establishment of suprapubic catheter drainage is a factor of safety; any pre-operative infection must be rigorously treated. There must be some mortality from this as from any operation in this type of case, but it is considerably less than after prostatectomy.

After operation the catheter is left in for two to four days with frequent irrigation; on its removal the patient can pass water, but some residual urine remains which must be removed as required until post-operative œdema subsides. Micturition is sometimes painful at first, and there may be transient slight loss of control, due probably to stretching of the external sphincter by the instrument. The patient leaves hospital after seven to ten days, and his sexual function is not altered by the operation.

As disadvantages may be cited the possibility of recurrence of obstruction, or of missing an early carcinoma, although the pieces are suitable for biopsy. The chief dangers appear to be sepsis and urethral shock. The operation demands much patience, but time spent at it is more than regained in the after-treatment.

ASTHMA AND DESENSITISATION

(DR. J. L. LIVINGSTONE)

DESENSITISATION of asthmatics, as of other allergic patients, may be either specific or non-specific. Specific desensitisation is carried out with the actual substance to which the patient is sensitive; non-specific desensitisation with some substance which is antigenic. Allergy is thought to be due to the presence in the blood stream of too many unsaturated antibodies; a non-specific substance used as a desensitising agent reduces the allergic state by causing saturation of some of these antibodies.

Specific desensitisation may be produced orally, intradermally, or subcutaneously. The oral method is useful with children, who are most commonly sensitive to substances like egg, milk, wheat, and fish. In a case sensitive to egg, for example, the patient is put on a diet containing no egg for 14 days and given daily a mixture containing acid. hydrochlor. dil., ʒiss., and pepsini glycerinum, ʒi., in a tumbler of sweetened orange juice and water. At the end of a fortnight one drop of egg-white is added to this mixture, and later two drops. Gradually the dose of egg-white is increased up to ʒi., and by the time the patient can take this amount of egg-white in the mixture he can generally tolerate the amount of egg usual in a normal diet. I am sure that the hydrochloric acid mixture helps in the process of desensitisation.

In desensitising a patient by the intradermal method, better results seem to be obtained if the injections are multiple. An extract of the specific substance, just sufficiently strong to produce a wheal when given intradermally, is prepared. The patient is taught to prick himself with a sterilised sewing-needle, and to rub one drop of the extract into the wound. He performs this operation twice daily until a wheal ceases to appear on application of the extract. He is then provided with a slightly stronger concentration of the extract, and repeats the process. The strength of the extract is gradually increased until no wheal is produced, even with high concentrations.

The subcutaneous method is often useful in cases of asthma due to house dust. Dust from old houses light, a helpful but not confirmatory test, though of much value if pus has already been detected in the middle meatus. Puncture-irrigation is, however, the only reliable test. A fine trocar and cannula is passed through the inner antral wall, generally beneath the inferior turbinal, the trocar is withdrawn, a syringe affixed to the cannula, and the sinus washed out with warm normal saline solution. Others pass a suction-syringe through the inner wall *above* the inferior turbinal, inject a sterile saline solution, and by suction remove the contents of the antrum both for diagnostic and bacteriological purposes.

The basic principle of treatment is to provide an opening in the lower part of the inner antral wall which will ensure free, spontaneous, and permanent drainage. The best operation is that introduced independently by Caldwell, Luc, and Spicer. The canine fossa is exposed, and its bony wall removed so that the interior of the antrum can be thoroughly inspected and diseased tissues removed. A counter-opening is next made by removing the whole of the inner antral wall below the attachment of the inferior turbinal. The bucco-antral wound is then closed. In children and young adults with sound teeth, and also in adults when there is no ethmoidal complication, the naso-antral opening can be made by brazing inwards the inferior turbinal, and then by suitable punch-forceps, removing the lower half of the inner antral wall. If the infection be caused by a septic tooth, the antrum should be entered through the canine fossa because there will often be found a mass of septic granulations above the focus of dental infection, and this could not be efficiently dealt with by way of the nasal cavity.

Ethmoidal suppuration is frequently present to some degree in cases of chronic antral suppuration because infection from the latter is so liable to enter the closely adjacent anterior group of ethmoid cells. In such cases there is a tendency for polypi or other mucous membrane hypertrophies to form, and these would increase the nasal obstruction. The extension of suppuration through the ethmoidal labyrinth may eventually bring about much increase of the nasal discharge accompanied by increased headache. In such cases infection will frequently involve the frontal sinus, and graver issues, fortunately uncommon, will arise should it gain access to the orbit and its contents or to the meninges.

The diagnosis of suppurating ethmoiditis would be established by the quick recurrence of purulent discharge when the cells are probed after the antrum has been thoroughly cleansed by puncture irrigation. The operative treatment of ethmoiditis not only requires, but demands, a very detailed knowledge of the anatomy and pathology of the region. Its intimate anatomical relationship to the orbit and its contents, to the meninges by way of the cribriform plate and the dural sheaths of the olfactory nerve expansions make it a very dangerous region for any but the skilled and experienced nasal surgeon. More deaths have occurred after surgical treatment of the ethmoid than have followed all other intranasal operations put together.

Here I must stop, without discussing the symptoms, diagnosis, and treatment of suppuration in the frontal and sphenoidal sinuses. On this occasion it is unnecessary to attempt to do so, for when a chronic purulent discharge is caused by a combined infection of all the sinuses, the differential diagnosis of their share in the condition is one which is always difficult. Its surgical treatment demands the most careful manipulations and, above all, a conscientious regard for the safety and sanctity of human life.

PROSTATIC OBSTRUCTION, WITH SPECIAL REFERENCE TO PER-URETHRAL OPERATIONS

(MR. E. W. RICHES)

PROSTATIC obstruction of some degree is one of the commonest affections of men of advancing years, but one which is readily amenable to treatment. Prognosis depends largely on the amount of renal damage, the nature of the prostate encountered, and to some extent on the type of operation performed. The duration of symptoms is some index of the amount of renal damage; as regards the nature of the prostate, the most important distinction is between malignant disease and benign hypertrophy, and, in the benign types, between the adenomatous or glandular enlargement and the fibrous prostate. The type of operation performed must depend on the general and local condition of the particular patient, and with the methods now available it should be possible to select the optimum treatment for each case.

The earliest symptoms are some increase in frequency of micturition, necessitating urination once or twice during the night, and a less forcible stream, with a little delay in starting and terminal dribbling. These are often disregarded by the patient, and it is not until frequency and difficulty become acute, micturition becomes painful, or acute retention or hæmaturia supervenes that he presents himself for treatment. Perhaps it is for his ultimate benefit if an exposure to cold, or alcoholic excess, precipitates these late symptoms and so leads him to seek advice earlier.

Examination of the early cases must be complete, and as rectal palpation so often fails to reveal the true state of affairs the examination must include cystoscopy. Intravesical projection of the prostate may be slight, but the amount of trabeculation in the bladder is an index of the degree of obstruction; the volume of residual urine should be ascertained at the same time. The passage of a cystoscope is often followed by a considerable temporary improvement in urinary function, the degree of which may be an indication for further treatment by dilatation before any operative intervention is desirable.

Despite improvements in technique and after-treatment the mortality of suprapubic prostatectomy is still high, post-operative complications are not uncommon, and the results in certain cases are not entirely satisfactory. We must therefore be ready to consider the possibilities of *per-urethral methods* of treatment, interest in which has been recently revived in this country. The credit for being the first to suggest the division of obstructions at the bladder neck by this route goes to Guthrie, an English surgeon, who, as early as the beginning of the nineteenth century used a knife concealed in a catheter for the purpose. Subsequent developments have come from France, Italy, America, and England, and at the present day there are instruments with which such obstructions can be seen and removed, and this without the excessive bleeding which frequently accompanied the earlier procedures. This advance has been made possible owing to the development of the diathermy current by means of which tissue can be coagulated, or cut with little bleeding, the term endothermy being sometimes given to the cutting current. Modern instruments fall into two main classes:—

(a) The coagulating type, with which the obstructing tissue is first coagulated by diathermy and then removed with a punch, or left to slough away.

inorganic colloids. Very contradictory results have been reported both in the treatment of human cancer and in the experimental study of transplantable animal tumours. In a paper entitled The Influence of Vital Dye-stuffs and of Metallic Colloids on Resistance to Transplantable New Growths. Dr. Ludford discusses the results of an experimental investigation of this problem. The successful transplantation of an animal tumour is, in effect, an experimental metastasis formation. One of the first results of the experimental investigation of cancer was a demonstration by Bashford, Murray, and Cramer, that there was in the normal organism a resistance to this experimental metastisation and that this resistance could be enhanced in various ways. Later workers have applied the term "immunity" to this condition, a term which is held to be misleading since cancer will arise as readily in an "immune" animal as in a normal animal, and since the induction of so-called "immunity," after a tumour has established itself, will not affect the growth of such a tumour. Dr. Ludford shows that this condition of resistance can be lowered by the injection of trypan-blue. This indicates that in the chemotherapy of cancer by colloids overdosage may be dangerous by diminishing the resistance to metastatic spreading. This effect is probably due to an interference by the colloids with the function of the cells of the lymphocyte and monocyte series, which da Fano, from his cytological analysis of the reaction occurring in resistant animals, believed to have an intimate connexion with the development of resistance.

This argument is carried further in a paper by Dr. Foulds in which he compares the metastatic spread of a transplantable rabbit tumour, the Brown-Pearce carcinoma, in normal animals and in animals injected with trypan-blue. This tumour shows, like many human tumours, a predilection for certain sites, as exemplified by the frequency of metastasis in the kidneys, adrenals, and eyes, while liver and lung are less frequently affected, and the spleen is very rarely the seat of metastases. This predilection manifests itself not only when the primary growth is in the leg or testis, but even when the emulsion of tumour cells is injected intravenously. In animals which have received injections of trypan-blue metastases appear much more frequently, not only in those organs where they are usually found (kidney, adrenal, eyes), but also in the liver and lung, and frequently even in the spleen. These experiments demonstrate in a striking manner the existence of a definite resistance, residing in the different organs, and varying from organ to organ, to the deposition of metastatic emboli. The freedom of an organ from metastasis does not necessarily mean that cancer cells have not reached that organ, but may be due to the organ preventing such cells from establishing themselves there. The fact that this resistance to metastatic spread can be broken through by affecting the macrophage system is of considerable importance for the chemotherapy, and also for the radiotherapy of cancer.

RADIOTHERAPY IN PRECANCEROUS CONDITIONS

The action of radium on normal and malignant tissues is the subject of five papers.

It is known that radium may induce cancer, and it has also been asserted on clinical grounds that irradiation of malignant growths may sometimes have a stimulating effect on cancer cells. It seems therefore that irradiation of a precancerous condition might precipitate the development of malignancy. Dr. W. Cramer has investigated this question by producing experimentally a precancerous skin area by a limited course of tar painting, and then subjecting it to therapeutic doses of radium. This treatment was followed by a delay or even a complete inhibition of a subsequent development of skin cancer. In no case was there any evidence of a stimulating effect by radium. The result is held to be of practical importance in showing that radiotherapy is strongly indicated in precancerous conditions, and that in suitable doses it does not involve any risk. In previous experimental work on the development of malignancy in a precancerous skin area, Dr. Cramer had pointed out that such precancerous conditions may exist in human cancer in the area in which a malignant growth has made its appearance, but extending far beyond the growth itself. If the growth only is destroyed by irradiation a new tumour may arise therefore from the precancerous area which has not been irradiated. That may happen soon, or 10 or even 20 years later. Clinically such a development of a second growth is generally regarded as a local recurrence of the first growth, and is interpreted as indicating that the first tumour has not been completely irradicated. Surgical experience has shown that these so-called local recurrences can be avoided by excising as wide an area of tissue as possible surrounding the growth, or in the case of the breast the whole organ. For this reason Dr. Cramer holds that radiotherapy also should aim at irradiating not only the growth, but the area in which it has arisen, and his experiments demonstrate that such a procedure does not involve the danger of precipitating the development of a new tumour.

SELECTIVE ACTION OF RADIUM

The remaining four papers deal with the mode of action of radium on malignant cells and the attempt to answer the question whether there is any evidence for the alleged selective action of radium on malignant cells compared with normal cells. Since cancer cells differ in their metabolism from most normal cells by their power to split glucose into lactic acid, both in the presence and absence of oxygen, it seemed possible that radium had a selective action on this glycolytic mechanism. Mr. H. G. Crabtree has tested this point by exposing slices of transplantable tumour in vitro to the action of radium and studying the effect of their metabolism. In a long series of experiments he shows that, contrary to expectation, the glycolytic mechanism is very resistant to the action of radium—much more so than the respiratory mechanism—and that the latter is affected equally in both normal and malignant cells. There is therefore no indication of a differential action by radium on the metabolism of cancer cells, and the results do not support the contention that cancer cells are inherently more vulnerable to radiation than normal cells.

In another paper Mr. Crabtree has studied the inactivation of a relatively simple chemical system—an oxidase system—by radium. He finds that the dose of radiation required to produce partial inactivation of the enzyme is several times greater than that required to destroy the metabolism of living cells, and that for this system β and γ radiations produce the same effect, differing only quantitatively.

The finer cytological changes taking place in irradiated cancer cells have been studied in detail by Dr. Ludford. He compares the effect on the cells of two different mammary carcinoma strains—the more differentiated strain 27, and the less differentiated and more rapidly growing strain 63—and of a rapidly and furniture is often responsible for asthma and gives positive skin reactions, but street dust rarely produces skin reactions. To make the necessary extract, a portion of dust from the patient's house is shaken up with ether to remove fats, and then mixed with a small quantity of Evans's solution, an alkaline buffered saline solution. It is left to digest for 24 hours and is then dialysed. The concentrated fluid left after dialysis is filtered through a Seitz filter to get rid of any organisms left by the ether, and a culture is subsequently made from it to ensure that it is sterile. It is then made up in dilutions ranging from 1 in 10 to 1 in 100,000. It has been found that these specific substances are inactivated by boiling, are non-dialysable, and resist digestion by trypsin. If the patient gives a skin reaction with a 1 in 10,000 dilution of the extract applied intradermally, it is wise to begin with a small dose of the 1 in 100,000 solution subcutaneously. This method is worth trying on the perennial asthmatic who is better out of doors or away from home. The trouble is that the extracts are expensive to prepare, and a patient has been known to move into a new house and make a complete recovery just as the extract was ready for trial.

For *non-specific desensitisation* old tuberculin (T.O.A.) is a valuable agent. The chief thing is to avoid giving too big a dose; it is advisable to begin with a very small dose and to work up until a reaction is obtained, after which the dose should not be increased further but kept at the same level. Another method of non-specific desensitisation is by autohæmotherapy; 5 c.cm. of blood are withdrawn from the patient's arm and reinjected immediately into the buttock; the amount of blood withdrawn at each treatment is increased until about 40 c.cm. are being drawn off and reinjected. This method occasionally keeps the patient free from asthma for about three or four months.

"Proteose" is used to desensitise patients by G. H. Oriel at Guy's Hospital. Proteose is a protein derivative easily extracted from the urine of the patient by ether. A certain number of cases do well under this method, and though I have not been able to secure quite the same results as those obtained at Guy's, I have seen some of the cases treated there, and am convinced that there was something in the use of proteose.

Vaccines are sometimes useful; in patients whose asthma has followed an attack of bronchitis, the anticatarrhal vaccine prepared by Parke, Davis and Co. can be used, but it is important to begin with a minute dose. Patients with asthma are far more sensitive to a dose of vaccine than is a normal person, and the preliminary dose should not exceed one-hundredth of the dose recommended for normal people.

SPECIAL ARTICLES

EXPERIMENTAL INVESTIGATION OF CANCER

IMPERIAL CANCER RESEARCH FUND'S REPORT

VITAL staining and the radiotherapy of cancer are the two main subjects considered in the nine papers forming the tenth scientific report of the Imperial Cancer Research Fund. Although at first sight these two lines of investigation seem to be independent of each other, the report shows that conclusions derived from one have an important application to the other and more generally to the chemotherapy of cancer.

VITAL STAINING

When an acid dye such as trypan-blue is injected into a living animal, dye droplets make their appearance in certain of the cells—particularly in the macrophages, where they accumulate in larger droplets, and also in the cells of the connective tissue and of the liver and kidney. No droplets appear in epidermal, gland, or germ-cells. This process of vital staining may be produced, as it is especially in the macrophages, by a phagocytosis of the dye droplets, or it may be the result of the passage of the dye into the cells which then actively segregate the dye; and it is difficult sometimes to distinguish between these two processes. Dead cells, or cells undergoing degenerative changes, such as keratinisation, also stain with trypan-blue; but this is a more diffuse staining produced by a passive coloration and is easily distinguished from the two forms mentioned above.

In a series of papers previously published Mr. R. J. Ludford, D.Sc., has discussed this process in detail, with special reference to the difference between normal cells and malignant cells, by injecting trypan-blue into mice and rats with spontaneous or transplantable tumours. He found that malignant cells, unlike their normal prototypes, remain almost entirely unstained. This distinction is particularly clear between normal fibroblasts which segregate the dye and sarcoma cells which do not, and also between normal and malignant mammary cells. The distinction also exists between normal and malignant cells of the skin, but it is here more a difference in degree than in kind. These observations have been carried further in two papers published in this report by Dr. Ludford and by Dr. Leslie Foulds. Dr. Foulds, in observations on six varieties of filtrable tumours of the fowl, found that the cells of five sarcomata or fibrosarcomata behaved like the sarcomata of mice or rats; they did not segregate trypan-blue under conditions which lead to its active segregation by histiocytes and fibroblasts. The sixth tumour, an endothelioma, showed, however, areas of cells containing relatively large masses of dye, while in other parts of the tumour the cells were free from dye droplets. Where this massive accumulation took place it was interpreted as being due to active phagocytosis and not to segregation.

Dr. Ludford has extended his observations to normal and malignant cells cultured in vitro in a medium to which trypan-blue had been added. The results confirm his previous observation that cancer cells do not segregate trypan-blue in the same way as their normal prototypes. In tissue culture of malignant cells it is difficult to distinguish between the malignant cells and the macrophages which wander out from the explants. The method of vital staining in vivo affords a means of distinguishing between the two since the macrophages stain intensely while the malignant cells do not.

The phagocytosis by certain cells of the body, especially the macrophages, of colloidal particles of a dye such as trypan-blue resembles in many respects the phagocytosis by them of particles of inorganic colloids. This is a phenomenon usually described as "blockade of the reticulo-endothelial system." In recent years attempts have been made to use this phenomenon in the chemotherapy of cancer by the injection either of dyes such as isamine blue or of by Dr. Y's legal representative, Dr. O'Donovan said that the perforation might have been made by a skilled person acting clumsily and might have been made by the patient herself. In his summing-up the coroner expressed the opinion that the woman's injury was not self-inflicted; he did not think anyone would inflict such an injury upon herself when about to go into a nursing home. Referring to the evidence, the coroner commented on the books kept by the nursing home. The matron of the home had previously said that one of the books containing particulars of her patients became so dilapidated that she and her secretary copied its contents into a new book; she had destroyed the dilapidated book; she had finished the copying-out after Mrs. Tremlett's death. She was questioned also about another patient (Miss B), and agreed that Miss B entered the nursing home on July 26th and not August 1st as originally entered. Miss B was also, it appeared, one of Dr. Y's patients; he had paid £10 for her. It was in connexion with Miss B's case that Dr. Y cut off the tops of his case-book pages. She complained, said Dr. Y, that the police had visited her; he then realised that her name was on the back of the page which he had given to the coroner's officer. "Therefore, before the officer arrived, I deleted from the book anything that might permit me to give away any further confidence; I did not consider a medical man should do so; his confidence with his patients should be as sacred as the confessional." Dealing with this aspect of the case, the coroner observed that, while he could understand a doctor regarding his case-book as sacred, and even that he should cut the tops off the pages, he could not understand why he should burn the tops. Unless Dr. Y thought he was deriving some protection from that, it seemed a very peculiar thing to do. As for the nursing home he would have liked to have said that it was free from any possible adverse comment, and he did not want to be understood as making any serious adverse comment about it except that there were considerable errors in the books. "I am going to return an open verdict," concluded the coroner, "which will leave the way clear for others dealing with such matters as death certificates and the keeping of registers to decide whether the facts brought to light here involve any action on their part."

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

TUBERCULOSIS IN NEW YORK

In spite of the rapidly declining death-rate from tuberculosis, this disease still takes a toll of over 5000 lives yearly in the city of New York. More than 30,000 cases of active tuberculosis are known to the city health department. The city hospitals care for some 12,000 cases each year.

In a recent analysis of the tuberculosis problem in New York, Louis I. Dublin, president of the American Public Health Association, pointed out that the present death-rate from all forms of tuberculosis in New York City (73 per 100,000 in 1930) is approximately one-quarter of the rate for 1900. He drew attention to the disparity of death-rates at the present time in various boroughs of the city. "The people who, when they lived in Manhattan, on the East Side of the city, showed, uniformly, rates of 150 and up to 200 per 100,000, seem to have left their tuberculosis behind them after moving to the Bronx (57); or to Brownsville, where the rate is only 36." The explanation is not only the improved housing conditions of the newer boroughs; there is an element of selection in those who lift themselves out of congested Manhattan. Dublin believes, however, that of the various factors making for the lower rates, housing is the most important.

A new racial group, the Porto Ricans, have recently made themselves at home in New York, and are helping to maintain the tuberculosis death-rate. Some 100,000 of them are said to live just beyond the "coloured belt" in Lower Harlem. One tuberculosis specialist, who holds a clinic at Mount Sinai Hospital, says that Porto Ricans constitute three-quarters of his patients there. Miss Whitney, statistician of the National Tuberculosis Association, has discovered that of 700 young women who died of tuberculosis in 1930 in New York 34 were Porto Ricans. This gives a death-rate for this racial and age-group four times that of the corresponding age-group in the general population.

A LABORATORY OF PUBLIC HEALTH ADMINISTRATION

Baltimore City is establishing in the sixth and seventh wards of the city a new health district which will be a training area for the Johns Hopkins School of Hygiene. This area contains the hospital as well as the new buildings of the school of hygiene. The director of this training area, who will also be a deputy officer of the Baltimore city health department, is to be Dr. H. S. Mustard. He will come to his new duties from the State health department of Tennessee, where he has been assistant commissioner of health. Dr. Mustard has had experience in private practice, with the U.S. public health service, as director of a national demonstration county health unit, and as a teacher of public health in Vanderbilt University.

FEDERAL RELIEF PROJECTS

To meet the emergency created by economic distress and unemployment in the coming winter certain funds have been made available by Congress, to be administered by a bi-party board, the Reconstruction Finance Corporation. $300,000,000 is available for direct relief provided that the governor of each State makes application and the Corporation satisfies itself that the State is making adequate efforts to cope with the need for relief out of its own resources. Some States have already been refused aid on the ground that their own efforts are inadequate.

A further $1,500,000,000 is available for loans on self-liquidating projects. Municipalities and boards of county commissioners may borrow from this fund as well as private enterprises. Apparently schemes for the construction of water-supply or sewerage systems may be financed by this fund, and an opportunity is thus created to advance the public health while at the same time relieving unemployment.

RESEARCH IN CAUSES OF MATERNAL MORTALITY

In the recent report of the New York State Health Commission a recommendation was made that the State health department investigate for at least one year every maternal death, outside the city of New York, in coöperation with local medical societies, to the end that avoidable factors in maternal mortality might be determined. This investigation is being pursued with diligence. The department transfers to a special form all data that are available from the death certificate. The form is then forwarded to a local representative, who makes every effort to get complete information. It is hoped that by making the investigation while circumstances surrounding the death are still fresh in the minds of attending physicians, valuable information may be obtained.

growing sarcoma strain. In addition, the effect on normal mammary cells of lactating mice was observed. The changes in the nuclear and cytoplastmic constituents are described in detail and illustrated by numerous text-figures. The general conclusion is arrived at that the primary effects of irradiation on the colloidal state of the protoplasm are probably the same in all cells, as well as a concomitant inhibition of mitosis, but the capacity of recovery as well as the later changes differ widely with different types of cells. This applies both to normal and malignant cells. The greater outburst of mitotic activity, after irradiating the more rapidly growing tumours, probably results in a larger number of non-viable daughter cells, and hence greater cell-destruction. It is however recognised that the direct cellular changes do not adequately account for the complete regression of malignant growths after irradiation, and that irradiation has no specific action upon cancer cells as such.

GENERAL THERAPEUTIC EFFECT OF RADIUM

Lastly, in a paper entitled Experimental Observations on the Therapeutic Action of Radium Dr. Cramer raises the question whether in addition to the local action there is a general therapeutic effect of irradiation, as has been suggested. He records experiments which appear to rule out completely this suggestion of a general therapeutic effect. This is followed by a discussion whether the local action of radiation is due entirely to the destructive action of radium on the malignant cells by some selective action, or whether there is in addition some other indirect effect which forms an essential part of the therapeutic action of radium. He shows that a dose of radiation sufficient to ensure regression, if the tumour is left in situ, does not directly destroy all the malignant cells of this tumour, because these irradiated cells will again give rise to new tumours if removed immediately after irradiation and inoculated into new animals. But although these cells have not all been killed they have been damaged; for the tumours obtained by inoculating these irradiated cells grow more slowly than the tumours from non-irradiated cells. If an interval of several days is allowed to elapse between irradiation and subsequent transplantation, the number of tumours formed from the inoculated irradiated cells diminishes, and it is only about eight days after irradiation that the inoculations give consistently negative results, indicating that the irradiated cells are now dead. Moreover, irradiation in vitro, where a very thin slice of a tumour is exposed to radium so as to ensure a complete irradiation of every cancer cell under optimal conditions, requires a dose which is not, as one would expect, smaller but rather larger than that necessary to produce regression of a whole tumour in vivo. From experiments such as these it is concluded that the assumption generally made at present—that every malignant cell has to be destroyed by a direct local action in order to bring about the regression of malignant neoplasm—is not valid. Some additional process must take place in the irradiated tumour which contributes to the eventual destruction of a malignant growth. By a further analysis of the changes following irradiation it is shown that both in normal and in malignant tissues irradiation damages not only the parenchyma but also the connective tissues, and especially the blood-vessels. This damage is followed by the usual reaction of repair in which the invasion of the damaged parenchyma by numerous macrophages is an outstanding feature. Illustrations are given of this invasion of irradiated tumours by macrophages which attach themselves to the damaged malignant cells, and of the subsequent formation of fibrous tissue, probably from these macrophages, which completes the regression of an irradiated tumour. This conception, which is in agreement with such recent observations as those of Dr. B. D. Pullinger on human material,[1] where the damage done to the blood-vessels has been particularly emphasised, should materially influence our conceptions of the rationale of radium therapy.

The report contains, in addition to over 200 printed pages with numerous text-figures, 55 plates, many of which are coloured. As Dr. J. A. Murray, F.R.S., the director of the laboratory, points out in the introduction to the report, the free use of monochrome and coloured figures, each with a complete legend, obviates the necessity for lengthy verbal descriptions of details in the text, and for most readers the summary and the plates will be sufficient. The report reflects the patient, careful work which characterises the research carried out in the laboratories of this Fund and indicates the wide scope and importance of its activities.

MEDICINE AND THE LAW

A Question of Destroyed Case-notes

DURING an inquest at St. Pancras a doctor explained to the coroner that he had cut off the upper part from all the pages but one in his case-book, and had burned the pieces in order to avoid being in a position to disclose his patients' secrets. The inquest, opened on Sept. 2nd, resumed on Sept. 20th, and concluded on Oct. 7th, concerned the death of Mrs. Tremlett, a woman aged 28, who died in a nursing home. In his final summing-up the coroner (Mr. Bentley Purchase) described the case as one of considerable complexity and importance. The names of two medical practitioners, to whom it will be convenient to refer here as Drs. X and Y, had been mentioned. Dr. X said that he had advised the deceased to see a gynæcologist and that she had herself then mentioned Dr. Y. The patient then entered a nursing home where she died after an operation. When Dr. Y told the husband that his wife was dead, the husband said it was the first time he had heard that his wife had been pregnant. A certificate (not a death certificate), produced during the proceedings, was described by Dr. X as a forgery. Dr. Y, said the coroner, gave the husband a death certificate, "and, if that certificate had been accepted, this inquiry might never have begun." The coroner had pointed out to Dr. Y that the death certificate did not mention the word "operation." Dr. Y explained that it was the first death certificate he had signed for years, and he was rather puzzled about it; it never occurred to him to mention the operation. Dr. M. J. O'Donovan, who conducted a post-mortem examination in the presence of Dr. Y, stated that the anæsthetic and the operation were terminal aggravating factors of the patient's death. There was a perforation which must have occurred 12 hours before the operation. Dr. Y, he said, seemed surprised when the perforation was discovered; Dr. Y called on him next day and seemed anxious to convince him that the perforation had been made at the time of the operation. Dr. Y's own version of this, in the witness-box, was that Dr. O'Donovan said something about some injury caused by a knitting-needle or some other instrument, but that his own opinion was that this could not possibly have been the cause of death. Answering a question medical man on the Commission was a guarantee that the medical point of view would not be ignored, and in recent years the attitude of the Commission, while impartial, was not unsympathetic with the profession. There is a possibility that under the new arrangements the medical considerations may not be given as much weight as in the past.

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[1] Jour. Path. and Bact., 1932, xxxv., 527.

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Preliminary conclusions from this study may be published early in 1933.

A similar study was undertaken in the city of Denver, Colorado, in 1930, both for maternal and infant deaths. The number of the former was, however, too small to yield conclusions of much statistical significance.

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

TRACHOMA IN HUNGARY

IN the southern parts of Hungary trachoma was prevalent as long ago as the middle of last century; in some districts it took a definite endemic form. A campaign against this scourge was started early in this century by Prof. Emile de Grosz, who organised the following scheme :—

1. Provision for continuous observation of all trachoma cases by means of (*a*) notification; (*b*) ophthalmological examination in schools, factories, and tenements, offices and military barracks, and of apprentices, domestic servants, demobilised soldiers, and recruits; (*c*) examinations of the eyes of the general population, this last being an emergency measure to be applied only on demand by the central authorities.
2. Free treatment in trachoma dispensaries, of which there were eight in the country; the medical service to be supplied by local practitioners for a fixed honorarium originally consisting of 100 crowns a month. The treatment carried out by these practitioners to be under the supervision of the medical officer of health, or of an ophthalmologist.
3. Improvement of hygienic conditions in schools, factories, and workshops; the foundation of industrial colonies in trachoma-stricken districts, in order to check the movement of trachomatous workers, and the support of the families of incapacitated trachoma patients. Soldiers suffering from trachoma to be treated in military hospitals.
4. Stimulation of research into the pathology and treatment of trachoma by means of grants and prizes, and instruction of the public by means of occasional popular lectures and courses.

These efforts bore fruit. In several cities special trachoma hospitals, wards, and eye dispensaries were erected until there were 1200 beds available for trachoma patients alone. In 1911, previous to Prof. Grosz's appointment, 12 experts and 90 parish doctors had been entrusted with the treatment of patients. Prof. Grosz succeeded in persuading the military and civilian authorities to work hand in hand. The Act of Conscription of 1913 contained the provision that those suffering from trachoma, yet otherwise fit for military service, should be placed in a hospital managed by specialists three months prior to the regular time of enlistment. Those who were cured joined their regiments, while those who were incurable were referred to a superior authority. The campaign against trachoma was reasonably successful up to the outbreak of the war. Patients with trachoma at the dispensary of the Budapest university ophthalmological clinic had been reduced from 7·2 per cent. in 1891 to 2 per cent. in 1910, under the schemes organised in 1883 by Prof. Feuer, and the reduction continued under the régime of Prof. Grosz. During the late war trachoma regiments were formed. The official report of these troops, which had been engaged in action, showed that 78·5 per cent. were cured, 21·2 per cent. still required treatment, and only 0·3 per cent. were certified as unfit for military service. With a view to the future release of the men on demobilisation the leaders of the campaign adopted extensive precautionary measures. The men from the trachoma wards were, however, scattered and thus carried the disease to areas hitherto immune. In 1924 the surgeon-in-chief of the army compiled a map on which the soldiers suffering from trachoma were grouped according to the districts to which they belonged. The map showed that the disease was prevalent all over the country.

In 1926 new inquiries were made in schools, institutes, prisons, factories, and tenements. The result was that, of 8,500,000 inhabitants, 10,000 trachoma patients were brought to light. Of 824,984 school-children, 3257 were found to be suffering from trachoma. The treatment was then entrusted to competent physicians for whose emoluments the State assumed responsibility.

Statistics from the eye clinics are illuminating. In the dispensaries attached to these clinics, the number of trachoma patients in Budapest, in 1930, was 1·5 per cent., in Segedin (the second largest city in Hungary), 10 per cent., and in Debretzin and Fuenfkirchen, 5 per cent. respectively. The difficulty of the situation is shown by the fact that of the trachoma patients examined at the university eye clinic upward of 50 per cent. were suffering from pannus, so that the visual power was already endangered. In spite of the critical financial position of Hungary, the sum of 81,000 pengö (£4000) was allocated in 1930 to the campaign against trachoma, over and above the sum of about 245,000 pengö demanded by the hospitals. Even now the number of beds (316) available for the treatment of trachoma patients in post-war Hungary is entirely inadequate.

IRRADIATION OF THE SPLEEN FOR MENORRHAGIA

At a recent meeting of Hungarian radiologists Dr. Horvath stated that he uses irradiation of the spleen as routine treatment in cases of obstinate menorrhagia and metrorrhagia, and in other cases of intractable hæmorrhage. He attributes the good results to the acceleration of the coagulation-time of the blood. His technique is as follows. In cases where the spleen is of normal size and in the normal position the patient lies on her right side, with the left arm raised high above the head. The actual size of the spleen is made out by percussion. X rays are then applied to the area corresponding to the splenic dullness over a field of about 20 × 15 cm. The focus skin distance is 30 cm., the other factors being 30 kw., 8 ma., with 5 mm. aluminium filter. The treatment is repeated after a lapse of four weeks, and if this does not prove sufficient, another exposure is given after three weeks. In general, not more than three or four irradiations are necessary.

IRELAND

(FROM OUR OWN CORRESPONDENT)

NATIONAL HEALTH INSURANCE COMMISSION

IT has been understood for some time that at least two of the National Health Insurance commissioners in the Irish Free State were likely soon to retire under the age rule of the civil service, and, in one case, it is understood that the operation of the rule had been temporarily postponed. It is now stated in the Dublin press that the three commissioners are about to retire on pension, and that in future the administration of National Health Insurance will be in the hands of an officer of the Department of Local Government and Public Health directly responsible to the Minister. The three commissioners, who have held office since the National Health Insurance Act came into force some 20 years ago, are Sir Joseph Glynn, chairman, Dr. W. J. Maguire, and Mr. Alfred Dickie. Although the medical profession has had its differences with the Commission from time to time, and particularly in the early years of health insurance, the change in administration will be regarded with some misgiving. The presence of a medical man on the Commission was a guarantee that the medical point of view would not be ignored, and in recent years the attitude of the Commission, while impartial, was not unsympathetic with the profession. There is a possibility that under the new arrangements the medical considerations may not be given as much weight as in the past.

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Lord Athlone then delivered a brief address on Andrew Balfour's character and work, describing him as "a man of a thousand enduring qualities and for every such quality he drew to himself a thousand friends." He outlined Balfour's professional career, instancing his successes, and continued:—

"When the South African war broke out we find him on duty in the pestilential typhoid camp at Pretoria, where he himself suffered from a severe attack of the disease. On his return from that campaign he came under the influence of Patrick Manson and devoted himself to the cause of tropical medicine and hygiene. There followed the first great step in Balfour's career in that field. In 1902 he was appointed director of the Wellcome Tropical Research Laboratories at the Gordon College in Khartoum and medical officer of that city. There is no finer record than the work of Balfour during the 10 years which followed. He transformed the dusty, ill-kept, insanitary mud-huts of the Khalifa into a model town, and banished malaria entirely from its precincts. . . During the war he served in France, Salonica, Egypt, and East Africa with the rank of Lieut.-Colonel R.A.M.C. He was a member of the Medical Advisory Committee of the Mediterranean War Area (1915–16), President of the Medical Advisory Committee Mesopotamia (1916–17), and President of the Egyptian Public Health Commission (1918). . . . To the work which was, alas, to prove the last of his labours—the building, the equipment, the organisation of this great school—Andrew Balfour brought the same passionate zeal, the same untiring energy which were characteristic of his whole career, and his inspiring personality is so very fresh in the minds of all of you that of his last great piece of work there is hardly any need to speak. The appointment of Andrew Balfour to be the first Director of this School gave to the School from its very inception a splendid introduction throughout the whole world and contributed perhaps more than anything else to the reputation which it has already established. Balfour was not only a great worker, but what is in my judgment perhaps quite as valuable, he was a great sportsman. You all know how, from the days when he threw his weight into the scrum of the Rugby International until the day of his death when he was President of the Scottish Rugby Union, his love for the game was one of the great passions of his life. Again, he was a prolific writer and lecturer, and as relaxation from the sterner stuff of life he found an outlet for his enthusiasms in the writing of novels of no mean order. Finally, and in a word, Balfour was a great Empire builder. And when I say this I am thinking not so much of his devotion to work, of his vast knowledge and contributions to the subject of Empire health, not of his academic distinctions, not of his contributions to sport and literature, but of his fine character. He was without guile, honest to the core, a man who evoked in his colleagues a spirit of love and sacrifice . . . It is fitting that on the memorial which I am now to have the honour of unveiling, there are engraved words which Andrew Balfour himself loved.

The Dean of the School, Prof. W. W. Jameson, then accepted with thanks on behalf of the Governors and the Staff, the memorial while expressing the indebtedness of all to Lord Athlone for his presence at the ceremony and practical interest in the affairs of the University of London.

PUBLIC HEALTH SERVICES

Increased Tuberculosis Mortality in Young Women

A noteworthy feature of the latest London mortality statistics[1] is the lack of decline in recent years in mortality from pulmonary tuberculosis amongst young women.

In his annual report for 1927 the Registrar-General of England and Wales pointed out that women of 15–35 years of age formed the only section of the population in which an improvement in mortality from phthisis had not been observed in recent years. The cause of this phenomenon has not so far been adequately explained, though it has commonly been attributed to the increase of young women in industrial and commercial employment. In London, according to the mortality-rates set out in this report, the phthisis mortality amongst women has actually risen between 1911–13 and 1929–31 by 23 per cent. at ages 15–20, and 30 per cent. at ages 20–25. At every other age, and at every age amongst males, a decline is registered. When these deaths from pulmonary tuberculosis, at ages 15–25, are stated as a percentage of the deaths, at the same ages, from all causes, it is found that London shows the greatest relative increase in phthisis, the rural districts of the whole country showing almost no change between 1911–13 and 1928–30. The suggestion is that in the rural areas the occupation of young women has not changed to the same extent as in urbanised areas. Yet when the London figures are considered in more detail by the comparison of two groups of boroughs—those representing the poorest population and those representing better-class areas with a low mortality-rate—it is found that the increase in pulmonary tuberculosis per cent. of all deaths among young women of 15 to 25 is much the same in both groups.

> "If change of employment from domestic work to commercial or industrial occupations or 'industrialisation' were alone the cause of the increased mortality from phthisis, the change should be far more conspicuous in the better class areas; for in these the occupation figures of the census years 1911 and 1921 show that, in the ten years intervening between them, the proportion of young women of this age engaged in domestic service decreased by nearly one-half, while in the poorer group of the population the number employed in domestic service is comparatively negligible in both censuses."

An analysis of further available data shows that practically the whole of the increase in mortality from pulmonary tuberculosis in London has been among single women. The obvious explanation that young women suffering from phthisis do not marry is insufficient to explain the considerable divergence between the single and the married. The possibility cannot be excluded that it is the young unmarried woman who is likely to be most adversely affected by economic conditions. As (judging by mortality-rates) their resistance to pulmonary tuberculosis in the early years of adolescence is less than that of young men, it is only to be expected that when adverse economic conditions are added at this period of life the young women will be much more affected than young men. If this is the explanation of the facts an improvement in economic conditions affecting young women wage-earners should be followed by a decline in this excessive mortality.

A factor which has not been considered in this report, but may affect London to a peculiar degree is internal migration. It has been shown[2] that in all probability the relatively *low* phthisis rates in the *urban* areas and the relatively *high* rates in the *rural* areas among young adults—especially women—are related to the migration of the more physically fit from the country to the town, the town mortality being lowered, the country mortality increased, by this movement of the healthiest. If, as there is some reason to believe, this selective migration to London has been slackening of recent years, the London mortality-rates, especially from phthisis, are likely to be swollen owing to this relative absence of healthier recruits. Though this might be a partial explanation of the abnormal rise shown in the London rates, it obviously fails to be a complete explanation, since, as has been pointed out, the lack of decline in pulmonary tuberculosis in young females extends to the whole country.

The problem is an important one, both to the social worker and the public health worker, and Sir Frederick Menzies has done well to draw special attention to it by this study of the London figures.

The Ex-Sanatorium Patient

In the same report to the London County Council Sir Frederick Menzies refers to the assistance given to tuberculous patients in obtaining employment after residential treatment. A scheme was adopted in 1928 which provides for the training for nursing and domestic service of selected patients at King George V. Sanatorium after a period of treatment and special observation at Pinewood Sanatorium. For men ex-sanatorium patients, two workshops for their employment have been established by the Central Fund for the Industrial Welfare of Tuberculous Persons. This work is still experimental, and the maintenance of the workshops is dependent to some extent upon a subsidy from charitable funds. In addition, in several boroughs, dispensary handicraft classes have been organised for those who are unfit for ordinary employment. The Council sends a number of patients to Papworth Village Settlement and to the Preston Hall Colony, a careful selection being made with a view to the admission of patients most likely to be accepted later as suitable for settlement, while at the Burrow Hill Colony training in gardening and clerical work is given to youths between the ages of 15 and 19 years. A scheme has also been adopted under which arrangements are made for special training to be given here to selected boys, with a view to their subsequent employment in the Council's parks department. In these ways remunerative employment is being found for a certain number of the Council's ex-sanatorium patients in an effort to reduce, even to a slight extent, the economic loss that this disease inflicts upon the community.

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[1] Report to the London County Council for 1931. Obtainable from P. S. King and Son, Ltd., Westminster. No. 2918. Pp. 58. 1s.

[2] Med. Research Council, Spec. Rep. Series No. 95.

CORRESPONDENCE

THE GENERAL PRACTITIONER

To the Editor of THE LANCET

SIR,—I have read in the current issue of THE LANCET, with very great pleasure, Dr. E. K. le Fleming's inaugural address at St. George's Hospital and I am glad that he has brought up the subject of the general practitioner. This subject is one about which, in my own small way, I have been agitating for years. At the present time students become qualified and are launched into the world without any knowledge whatever of the very essentials of conducting a general practice successfully, and when I say successfully I mean both as regards the patients as well as regards themselves. I do not think Dr. le Fleming's suggestion goes far enough. I should like to see the old days of apprenticeship revived, though in a modified form. I do not think four years, such as I served, necessary but I do think that before a man is allowed to practice he should be compelled to serve at least *one year's* apprenticeship with a general practitioner. The result would be incalculable benefit to the public and to the man himself.

I would go further and apply the same compulsion to all intending consultants. They would then have a far better understanding of, and a greater sympathy for, the many difficulties with which a general practitioner has to contend.

I am, Sir, yours faithfully,

E. F. PRATT, M.B.

Clarges-street, W., Oct. 10th, 1932.

HOUSE INFECTION IN BLACKWATER FEVER

To the Editor of THE LANCET

SIR,—In a leading article on blackwater fever in your issue of Sept. 17th (p. 636) it is pointed out that Dr. Ross is in agreement with previous observers in finding no justification for the suspicion that certain houses predispose to infection. While on the staff of the C.M.S. Hospital, Ngora, Uganda. I had an opportunity of studying the disease amongst Indians, and would like to draw attention to the following examples which are evidence to the contrary.

(1) On Oct. 30th. 1930, a man. aged 40, developed an attack of blackwater fever after being given plasmoquine and quinine for malaria. His wife had died from the disease in the same house four days previously.

(2) A man. aged 24. came to be examined on April 22nd, 1931, because he was in anxiety lest he might develop blackwater fever, his brother having died from this disease in his house 13 days before. On examination he was found to have a palpable liver, a spleen whose lower limit was three fingers-breadth below the costal margin and a temperature of 101·2° F. His urine had a specific gravity of 1020, was acid in reaction, and contained no albumin or bile. I considered that he was in the pre-blackwater state though it should be acknowledged that certain authorities, including Drs. Ross and Yorke, Murgatroyd, and Owen,[1] do not recognise such a condition.

(3) A man, aged 24. gave a history of seven attacks of blackwater fever, five of which occurred during the year 1930. His daughter, a girl aged 6, who had been living in the same house, also complained of three attacks all of which occurred during the year 1930.

(4) This is an interesting example of a house in which seven attacks of blackwater fever had occurred, two of them being recurrences three years and four years respectively after previous bouts of the disease. Four of the cases occurred during the space of 11 months, between July 6th, 1930, and May 15th, 1931, one of the patients developing the disease one day after his brother. Of the other three cases one was that of a girl who developed the disease two days after her brother. All the patients were members of the same family with the exception of one man who was a cousin. In no case was the disease fatal.

An examination of the house mentioned in (4) shows some features of interest. The building was situated by itself and was enclosed by an orchard of orange and lemon trees which gave shade to the house and protected it against wind. It had a low thatched overhanging roof. The windows were very small and were unprotected by mosquito-netting. The interior of the house was dark even at midday. There were 11 occupants who were subject to frequent attacks of subtertian malaria. Such a building would be an ideal resting place for mosquitoes which could readily gain entrance through the unprotected windows at night, but owing to the absence of light and draught, would show no inclination to leave during the day. This should be compared with the typical house of an ordinary Indian village in this district which, though unprovided with mosquito-netting, possessed a high corrugated iron roof with a wide interval between roof and walls and usually fairly large windows which, if opened during the day, would allow entrance to light and air. There were only a few small trees in the vicinity.

These observations strongly favour the importance of chronic subtertian malaria, which is the prevalent form encountered in this district, in the ætiology of blackwater fever, and the view that certain houses predispose to the disease by reason of the shelter which they offer to the infected anopheles mosquito.—I am, Sir, yours faithfully,

A. D. CHARTERS, M.B. Camb., D.T.M. & H. Eng.

Sevenoaks, Oct. 4th, 1932.

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[1] Yorke, W., Murgatroyd, F., and Owen, D. U.: Trans. Roy. Soc. Trop. Med. and Hyg., 1930, xxiii., 353.

MARMITE IN PERNICIOUS ANÆMIA

To the Editor of THE LANCET

SIR,—In your last issue (p. 782) Dr. A. Goodall records his experience of giving marmite in large doses to 19 cases of pernicious anæmia. Similar findings of my own, as yet unpublished, may be of interest. A year ago I noted in your columns (1931, ii., 63) the occurrence of a reticulocyte response during the administration of bemax, and since that time I have endeavoured to determine the potency of various substances rich in vitamin B for blood regeneration in anæmias. I have found that in Addison's anæmia marmite in doses of 4 oz. daily usually produces a satisfactory reticulocyte response, with a rise of red cells and hæmoglobin, although in some instances the remission has seemed less rapid than with large doses of liver extract. Since these results are obtained in cases of true Addisonian pernicious anæmia with achylia, in which the intrinsic factor of Castle is presumably absent, it would seem possible that yeast contains some substance effective for blood regeneration in this disease, apart from that which Strauss and Castle[1] believe to be the extrinsic factor.

As Dr. Goodall infers in his closing remarks, it would be unwise to let any form of extract take the place of whole liver where subacute combined degeneration of the cord is present.

I am, Sir, yours faithfully,

Newcastle-on-Tyne, Oct. 10th, 1932. C. C. UNGLEY.

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[1] THE LANCET, July 16th p. 111.

TANNIC-ACID THERAPY

To the Editor of THE LANCET

SIR,—My use of tannic acid varies considerably from the ideal set out in your issue of Oct. 8th. In the first place burns of any sort are comparatively seldom the occasion for tannic-acid therapy and, in the second, I have never used it except by direct application of the powder to the surface requiring treatment. I do not for one moment suppose that I am alone amongst general practitioners in using tannic acid in this way nor do I claim any particular skill or priority.

There is a type of lesion with which we are all familiar and which is commonly seen on the faces of motor cyclists who have stopped more suddenly than they intended, usually head first. It occurs also on the elbows of venturesome childhood and even more often on the knees. This lesion is made up of a number of small cuts and scratches set close together. Wet dressings stick to it. Dry dressings do the same. Ointments eventuate in a more or less septic sore calling for fomentations. Long before tannic acid was introduced to the profession as a dressing for burns I had made experiments with various powders in the hope of evolving one which would form an antiseptic scab over such lesions and thus obviate the need for any further dressing. I had very fair success, but the coming of tannic acid was immediately hailed as a possible solution of the problem. Experience has not belied the promise. Thus I found myself embarking on a type of tannic-acid therapy in which solutions and burns had little part. Burns occur from time to time in general practice and, as far as my experience goes, are easily and comfortably treated by dusting the tannic powder directly over the burn. But the main usefulness of tannic acid is in other directions.

The *indications* for tannic-acid therapy are (1) the presence of a raw surface on the epidermis which (2) is little or not at all septic and (3) is likely to cause considerable trouble and pain if treated by any application requiring constant renewal. The surface should not be entirely denuded of epithelium except where the total area is two square inches or less.

The *cases treated* include many injuries occasioned by motor accidents and many examples of the raw area left by avulsion of nails with or without destruction of the nail bed : burns, surgical wounds of which the edges are no longer in apposition, one or two small varicose ulcers, and other similar conditions. A colleague tells me that he has had good results from packing the powder into septic sulci caused by ingrowing toe-nails. In general, sepsis is rather a contra-indication but tannic acid is an excellent antiseptic and can deal with minor septic invasions.

Technique.—Tannic acid will not remove from motor wounds traces of dirt and oil. But it will cover these up and keep them sterile so that they become incorporated in the natural scar forming beneath the tannic-acid covering. The result is not good, especially on the face. Tannic acid will control oozing in most cases but not real hæmorrhage unless pressure also be applied. This involves a dressing in contact with the tannic acid. One tries to avoid such dressings. It is far better that the tannic acid should dry and turn black in contact with the air. When a covering is necessary I use wool applied directly over the acid and bandaged in place. After two or three days I pull or cut away all the wool not involved in the scar, that is, all that will come away. No further dressing or bandage is applied.

Where the area treated is small the thickness of powder applied is not of much moment. It can be powdered on and left for about 60 seconds. The surplus is blown away or lightly brushed away with a piece of wool. Where the area is large, as in an extensive burn, one is left wishing that this powder lent itself better to application with some sort of insufflator. I have thought of mixing it with other powders—e.g., finely powdered aspirin which is soothing—but have not actually done so. The biggest area actually treated in the method outlined above was about a foot square. There were two such areas, one on each thigh, caused by boiling water. The case did very well but the protective covering of tannic acid was not as even as one could have wished. In consequence it cracked here and there, and had to be reinforced during the first two days by further applications of the acid. A solution might have done better in this case, but even application of the powder would, I feel sure, have done better still.

I have never encountered any case in which the application of the tannic acid caused distress, although there have naturally been one or two in whom pain was felt on the first far view of the powder. In no case have I earned anything but the goodwill of hospital sisters and nurses by adopting this treatment.

I am, Sir, yours faithfully,

Sevenoaks, Oct. 9th, 1932. GORDON WARD.

FUSO-SPIROCHÆTAL DISEASE OF THE LUNGS

To the Editor of THE LANCET

SIR,—I have read with interest Dr. Heffernan's note in your issue of Oct. 1st (p. 734) on "fuso spirochætal disease of the lung," of which he describes four cases. May I ask what this disease is ? The note does not make clear whether it is a purulent bronchitis, a lung abscess, or any respiratory infection in which, amongst many others, Vincent's organisms are found. These organisms abound in the sputum of most cases of single lung abscess, from which condition I believ three at least of Dr. Heffernan's patients suffere The first two cases gave a typical history of one typ of lung abscess. An anæsthetic was given for dent extraction ; a few days later there was fever wit symptoms and signs pointing to a lesion in the chest this was followed by the coughing up of a large amour of purulent sputum and rapid cure. The thir case seems to have had a lung abscess which rupture into a bronchus which was inconveniently place for good drainage and so cure was not complet The fourth case was somewhat similar, and I thin the diagnosis of chronic lung abscess, probabl basal, is quite tenable.

I am, Sir, yours faithfully,

London, Oct. 7th, 1932. A. S. HALL.

SAFE MILK

To the Editor of THE LANCET

SIR,—Dr. Carling's letter and the correspondenc on it prompt me to bring to your notice a method home pasteurisation of milk which has been in use my own household for some time. The requirement of adequate pasteurisation are that the *milk shall b* brought to a temperature of 145–150° F. withou any part of it having been heated above this temperature ; *that it shall be maintained at this* temperature for half an hour ; and that it shall then be coole to the lowest practicable temperature.

The first object is attained by heating the milk in a ordinary jug with an electric immersion heater, rated a 400 watts, which raises a quart of milk to the right temperature in 11 minutes. The heater is stirred continuously, an by this means the heat produced is distributed over a larg volume of milk, instead of any portion of the milk bein overheated and coagulated, as occurs in a pan over a ga flame. When the jug feels to be approaching the correc temperature a thermometer is placed in the milk. Th

> rrent is switched off when the temperature reaches 146° F., though the heater is still kept moving until the temperature ases to rise. The rise of temperature after switching off ries with the quantity of milk being heated; with a uart the rise is about 2° F.
>
> The object of the second stage is attained by pouring the eated milk into a warmed vacuum flask (or flasks), which then stood in a warm place for half an hour. During this me the temperature of the milk falls only about 1° F. eantime the jug which is to receive the milk is scalded out ith boiling water, and when the milk from the flask is oured into it the jug is placed in a large dish of cold water.

By these means the requirements of satisfactory asteurisation are fulfilled. There is no doubt s to the milk having been maintained at the required emperature, and its physical properties appear to be n no way altered. The only technical difficulty in he method is the reading of the thermometer. his operation is rather a stumbling block to the ninitiated, and the process of pasteurisation cannot herefore be safely entrusted to the average domestic taff, but must be performed by some member f the household. In view of the advantages of asteurisation, however, the slight trouble involved s well repaid.

I am, Sir, yours faithfully,

F. C. S. BRADBURY,
Assistant Tuberculosis Officer,
Lancashire County Council.

Oct. 8th, 1932.

RESPIRATORY EFFICIENCY TESTS

To the Editor of THE LANCET

SIR,—The letters from Dr. Corner and Dr. Treadgold in your last issue call for some reply. With regard to the criticism that I have misinterpreted Flack, I cannot agree. I have carefully read the Milroy lectures once again and their impression on my mind is this: good air pilots gave certain standards with the mercury U-tube tests, pilots suffering from strain fell below these standards, the general population will probably also fall below these standards because of physical inefficiency, but if only everybody would perform the exercises elaborated in the third lecture, the Air Force standards might be reached. I think this is a fair summary of Flack's views and I believe them to be in this respect unduly optimistic. The only normal standards at present existing for the tests are those adopted by the Air Force and I attempted to show that for the "hospital population" such standards were useless.

Dr. Treadgold suggests that I have misinterpreted the importance attached to the expiratory force and 40 mm. Hg tests by the Royal Air Force authorities, but I tried to make it clear that these were only two out of several tests employed. The phrase I used about the U-tube tests that they were reintroduced by Flack "for use in connexion with standards of respiratory efficiency for air pilots" was meant to convey this, but I ought, perhaps, to have written "other standards." With the rest of Dr. Treadgold's letter I am in agreement.

I regret my slip in attributing the early spirometric work to *Jonathan* Hutchinson when his name was *John*.

I am, Sir, yours faithfully,

London, W., Oct. 8th, 1932. ALAN MONCRIEFF, M.D.

THYROIDEUM B.P. 1932

To the Editor of THE LANCET

SIR,—There is considerable conflict of opinion about the thyroid extract of the new Pharmacopœia. Certain hospitals have been offered U.S.P. Thyroid Powder, which has an iodine content of 0·2 per cent., as being twice the strength of the new B.P. preparation and several inquiries have been sent to us asking if it is satisfactory to dilute this U.S.P. preparation with equal parts of milk sugar to produce the B.P. 1932 product. It should be borne in mind that Thyroideum B.P. 1932, although being standardised to contain 0·1 per cent. iodine in combination as thyroxine, actually contains more than 0·2 per cent. total iodine. An assay of a good grade thyroid will give a content of approaching 0·3 per cent. total iodine. Of this iodine probably 10 per cent. will be inorganic; of the remaining 90 p.c. thyroxine iodine will account for 30 to 60 p.c. The rest of the organic iodine is in the form of acid soluble di-iodotyrosine, which is physiologically inert. Of the three iodines therefore present in thyroid, only one—namely, acid insoluble thyroxine iodine—is recognised in the B.P. 1932 product, and it is on the thyroxine iodine content alone that the standardisation is determined.

We are, Sir, yours faithfully,

ARMOUR AND COMPANY, LTD.
London, Oct. 8th, 1932. (Laboratory Department).

To the Editor of THE LANCET

SIR,—An important point in connexion with Thyroideum B.P. 1932, which is apparently not generally appreciated, is that this thyroid has no fresh gland equivalent. Thyroid of the B.P. 1932 is a dry gland standardised to contain 0·1 per cent. iodine in combination as thyroxine and every batch of thyroid made has to be adjusted to contain this amount. There is thus no standard equivalent of fresh to dry gland and it will therefore be no longer possible to prescribe and dispense thyroid in terms of fresh gland, as is commonly done at the present time.

Further, it should be noted that thyroid extract, thyroid gland, and dry thyroid are now synonyms for thyroid B.P.

I am, Sir, yours faithfully,

H. W. PAINES, M.P.S.
Fitzroy-square, W., Sept. 28th, 1932.

DR. DORIS ODLUM asks us to state that her article on Nomenclature of Mental Disease, in our issue of *Oct. 1st* (p. 754), expresses her own views, and must not be taken to represent the views of the National Council for Mental Hygiene, to which (we stated) she is joint honorary secretary.

A SWEEPSTAKE FOR BRITISH HOSPITALS.—At a special meeting of the council of the British Hospitals Association it has been decided to distribute any money which may be allotted to the Association from a sweepstake held abroad. Sir Harold Pink, the chairman, stated that money so obtained would be used for capital expenditure only. It is understood that a tentative offer has been made by a syndicate to allocate to the hospitals "at least 25 per cent." of the proceeds of a lottery. According to unofficial statements the sweepstakes are to take place under the auspices of the Casino and the International Sporting Club of Monte Carlo. The first sweepstake will be on the Grand National and, to meet the views of the Jockey Club, the draw will not be held until the day of the race.

ROMAN CATHOLIC HOSPITALS.—Dr. Downey, Roman Catholic Archbishop of Liverpool, recently opened extensions to the hospital and nursing home conducted by the Augustinian Sisters at Park House, Waterloo, Liverpool. The enlargements, which have cost £7000, have increased the accommodation for patients from 15 to 32. Eighteen new rooms have been added, including eight private rooms, two maternity wards, a theatre, and a large children's nursery.—A new nurses' home attached to the hospital of St. John and St. Elizabeth, St. John's Wood, was opened recently. The cost has been £18,500, and it will now be possible to house under one roof the staff of 60 nurses who were formerly scattered in three separate houses.

PANEL AND CONTRACT PRACTICE

"Failing to Comply"

THE appeal by the medical officer of a London hospital against a resolution of the London insurance committee, that he had failed to comply with regulations by not personally attending the insured persons for whom he was responsible under contract, was heard on Oct. 7th at the Ministry of Health. The decision of the Ministry is not yet known. In the course of the hearing a rather subtle legal point was raised by the deputy clerk of the committee as to whether there was a difference between "failing to comply" with regulations, and a definite breach of them. He thought there was a difference, but only a very fine one. He suggested that it would have been a breach of the regulations for the doctor in this case to say to his insured patient, who asked for a certificate of incapacity (there being no doubt of the incapacity). "I refuse to give it," but to so arrange matters that he never saw patients at all was failure to comply. The legal assessor thought there was no difference; you could not have a failure to comply without committing a definite breach of the regulations. The case appeared to turn definitely on the fact whether the doctor who did the work —who was undoubtedly non-panel—could be considered as deputy of the insurance practitioner, and as such bound by the regulations.

The Practitioner's Good Name

The Insurance Acts Committee have issued a supplementary report, which will be considered by the Panel Conference when it meets on Oct. 20th. The committee is continually watchful of the interests of the insurance practitioner. It has recently protested to the Ministry of Health at their failure adequately to defend the insurance medical profession when attacked in the House of Commons. A statement has now been obtained from the Minister that the reputation and interests of the insurance panel will on all occasions be appropriately protected and defended to the best of his ability.

Exchange of Views

The Insurance Acts Committee had suggested to the Ministry that before a regional medical officer reports to an approved society that an insured person is fit for light work or other occupation there should be an opportunity of exchange of views between him and the practitioner. The Ministry disagree with this; in this class of case, they say, it is open to the practitioner—

(a) to inform the patient that whereas he had only considered his fitness for his normal occupation he was satisfied on further consideration that he was fit for alternative occupations;

(b) to indicate concurrence with the R.M.O.'s report by issuing a final certificate with a note to the society giving the reasons which led him to modify his previous opinion; or

(c) he may issue an intermediate certificate, intimating his reason for differing from the R.M.O.'s opinion.

In these circumstances the society will frequently refer the case again, and the practitioner is given an opportunity of seeing the case in conjunction with the examining officer at a time fixed to suit the convenience of the practitioner.

Voluntary Contributors in the Post Office

The Postmaster-General has drawn the attention of the British Medical Association to the position of post-office employees entitled by reason of th employment to free medical attendance from post office, and also qualified for medical ben under the N.H.I. Acts by electing to become volunt contributors. Apparently several employees chosen the post-office doctor as their panel doct and this doctor was therefore being paid twice o for the same service. The P.M.G. suggested t this was an infringement of the terms of service the part of the insurance practitioners concern as they had contracted to refrain from accept remuneration from sources other than insurance fu in respect of duties devolving upon them under N.H.I. Acts. He thought that in these cases post-office capitation fee should be scaled down as to exclude duties covered by insurance, 2s. 6d. per head being allowed to cover the advisory and administrative duties which these medical officers would still be called upon to perform. The B.M.A., after consulting counsel, replied that whilst it did not countenance dual payment it strongly challenged the contention that there was any infringement of the terms of service. The P.M.G. then said that whatever the legal position the services rendered under the Act and under the post-office medical service were largely identical, and he suggested a settlement by the end of the year on the lines indicated above. This was agreed to in cases where the post-office doctor and the insurance doctor are the same person. If the voluntary contributor transfers to another insurance practitioner the 2s. 6d. fee reverts to 11s. for the post-office doctor. The private practitioner, who is post-office doctor and not on the list of any insurance committee, is not affected by these proposals.

Brandy as a Medicine

"Doctors may prescribe brandy as a medicine for their panel patients" is reported to be the decision of the Ministry of Health. This settles a dispute that arose in Bath, where an insurance practitioner prescribed "brandy" on a National Health Insurance form, and the prescription was challenged. Apparently the view of the Ministry is that whilst brandy can be used for other purposes that does not prevent its being used as a medicine. Practitioners would, no doubt, be well advised to be cautious in exercising this liberty, as they will have to be prepared to justify its prescribing in the case of inquiry.

The Insurance Acts Committee have approved of the Ministry's proposal that insurance committees should inform insured persons accepting transfer to the successor of a practice, nominated under Clause 4 (1) of the terms of service, that they need not have their cards signed by the successor, the signature of the predecessor being regarded as sufficient.

The new issue of the British Pharmacopœia necessitates a revision of the National Formulary, and suggestions are invited from all panel committees for the improvement of this revised edition. A special committee is working on it, and it is expected to be ready about the middle of 1933.

PAPWORTH VILLAGE SETTLEMENT.—A "dower house" for nurses was opened recently. It has been erected by ex-patients, now employed by Papworth Industries, at a cost of £1750.

OBITUARY

LORENCE ADA STONEY, O.B.E., M.D. Lond., D.M.R.E.

Dr. Florence Stoney, who died on Oct. 8th after long and painful illness, was one of the band of edical women who in August, 1914, within a fortght of the outbreak of war, had already formed emselves into a corps equipped for foreign service, d actually started for Brussels on August 18th. he advance part of the corps, which was organised y Mrs. St. Clair Stobart, were taken prisoners; the ain part escaped, and with its medical staff, organised to release most of the senior women rgeons for other work, set out this time for Antwerp. he quiet skill with which, under Dr. Stoney's direcon, a music hall was converted into a surgical hospital in less than five days won especial praise from the British Consul-General: and though this hospital had to be evacuated in less than a month from its establishment, after being under shell-fire for 18 hours, it filled a need at a time when the British war hospitals had not yet reached Antwerp, for British and Belgian wounded could be taken there straight from the front line. It was this successful enterprise which showed the potentialities of hospitals staffed by medical women, and encouraged Dr. Elsie Inglis later to found the Scottish women's hospitals.

DR. FLORENCE STONEY

[Photograph by J. Russell & Sons

Dr. Stoney was born in 1870, being the second daughter of G. Johnstone Stoney, Sc.D., F.R.S., secretary to the Queen's University of Belfast. She received her medical education at the London (R.F.H.) School of Medicine for Women, where she was a distinguished student. She qualified M.B., B.S. Lond. in 1896, and became M.D. in 1898. After holding an appointment as house surgeon at the Victoria Children's Hospital, Hull, Dr. Stoney turned her attention to the then new specialty of radiology, and organised and developed the X ray departments at the Royal Free and at the Elizabeth Garrett Anderson Hospitals, while acting also as demonstrator in anatomy at the London School of Medicine. This work, combined at first with general practice, and later with private practice as a radiologist, engaged her energies until the war, when it was her desire to put her experience of a specialised branch of medical knowledge at the disposal of the nation, rather than a zest for excitement, that led to her pioneer activities. These did not cease with the evacuation of the Antwerp Hospital. In November, 1914, the corps was abroad again, at the request of the French Croix Rouge, installed in the Chateau Tourlaville, near Cherbourg. It was not suited for a hospital, and Florence Stoney and her colleagues had to arrange for sanitation, water, heating, and even to generate their own electric power. The hospital was soon ready to receive cases; slighter cases were sent on south, and only those very badly wounded were retained. By March, 1915, this stream of wounded had been diverted, and Dr. Stoney felt able to accept the post of radiologist to the Fulham Military Hospital (being for some time the only woman on the staff), where over 15,000 patients went through her department, other hospitals sending in cases for X ray localisation of bullets. Dr. Stoney received the 1914 star, and on demobilisation the O.B.E.

After the war she was unable, on grounds of health, to resume work in London. In 1920 she took the D.M.R.E. at Cambridge and settled in Bournemouth in radiological practice, being appointed consulting medical officer to the electrical department of the Royal Victoria and West Hants Hospital, Bournemouth, and consulting actinotherapist to the Victoria Cripples' Home. She retired in 1928 and travelled in India, studying especially osteomalacia and its treatment by ultra-violet radiation, on which she published observations.

Dr. Stoney's charming whimsical manner made it difficult to perceive at first the strength of her personality. She did not seek adventure, but only the opportunity of quiet service. Her organising skill and tact undoubtedly opened the door through which many medical women subsequently passed without fuss or hindrance to give war service which was recognised as being of the utmost value. It is not generally known that the portable X ray equipment, in those days a rare possession, with which she offered her services in vain to the War Office on August 4th, 1914, was assembled by her and her sister, Edith, as the outcome of Lord Roberts's suggestion that medical women might be of especial use in the event of an outbreak in Ireland. The urge to be equipped for service was a characteristic of Florence Stoney, and enabled her to do well any work which came to her hand.

THE LATE PROF. STIRLING

Dr. REGINALD LAWRENCE (County Hall, Wakefield) writes: "To your obituary notice of Prof. Wm. Stirling I should like to add a personal impression of his lectures which remains vivid after the passage of many years. His tall figure was commanding, and his mannerisms of bearing and dress accentuated the effect. The relation between him and his students was intimate, and his utterance was followed attentively, because without any change in his impassive face he would, with some surprising remark, convulse the class with laughter and as readily check it if it tended to become too boisterous or prolonged. I never knew anyone take liberties with him.

"A more lasting impression, however, is the sloping ledge in front of his lecture table on which were displayed, open at the correct page, the original authorities for the current lecture. He personally stimulated me to learn German, and the occasional loan of the papers and monographs, set out daily, served to keep up the stimulus. But even that was not so powerful as the revelation of his knowledge of physiologists and their milieu which enabled him to write his 'Apostles of Physiology' later. His reference to his 'revered master Karl Ludwig' was always cheered (as a great joke), but the mention of other names, accompanied by contemporary details, was of more than passing interest. Harvey and Malpighi brought with them a short account of the universities of the middle ages, Padua and Bologna respectively; Ranvier as a zoologist showing his genius in the selection of his material to demonstrate histological structures; Claude Bernard working in comparative neglect in a cellar at the Collège de France led on naturally to the University of Paris; and, again, Stannius 'in far-off Rostock' whose ligature of the heart enabled heart muscle t be studied apart from nerve tissue, and described hi discovery in a pamphlet of about two pages (O si si omnes!); Haller, Majendie, Stephen Hales—th neighbour of Gilbert White; and, outside physiolog significantly enough Casanova and Voltaire wl visited England. These are only a miscellaneo few which come to mind, and there were ma others. The allusions were not mere decorati details but part of the texture of his lectures, whi he thus raised to the level of cultural importance."

MEDICAL NEWS

University of London

At recent examinations the following candidates were successful:—

D.P.H.

L. P. Clarke, Dorothy Makepeace, T. L. Narayana, and Doris G. Sharvelle.

University of Liverpool

At recent examinations the following candidates were successful:—

D.P.H.

L. G. Anderson, *F. J. H. Crawford, C. L. Emmerson, H. P. Fowler, and G. A. Fulton.

* With distinction.

University of Bristol

The Long Fox memorial lecture will be given at 5.30 P.M. on Tuesday, Oct. 25th, by Mr. A. J. M. Wright, surgeon to the nose and throat department of Bristol General Hospital. *His subject will be the Problem of Deafness, and the vice*-chancellor of the University will preside.

Medico-Legal Society

At a meeting of this society, to be held at 11, Chandos-street, London, W., at 8.30 P.M. on Thursday, Oct. 27th, Sir John Collie will open a discussion on Fraud in Medico-Legal Practice.

Hampstead and North-West London Hospital

On Wednesday, Oct. 26th, at 3 P.M., Sir Ernest Graham-Little will open a post-graduate course at this hospital with an address on Voluntary Hospitals and their Future. Subsequent lectures will be given on Wednesdays at 4 P.M.

South-West London Post-Graduate Association

A series of lecture-demonstrations will be held at St. James's Hospital, Ouseley-road, Balham, on Wednesdays at 4 P.M. from Oct. 26th. At the first Dr. H. J. Churchill will speak on Anæsthetics in General Practice. Particulars of membership may be had from the hon. secretary, Dr. R. J. Saunders, 10, Lyford-road, Wandsworth Common, S.W. 18.

West Kent Medico-Chirurgical Society

The annual general meeting of this society will be held to-day, Friday, Oct. 14th, at the Miller General Hospital, Greenwich, at 8.45 P.M., when cases will be shown. At the second meeting of the session, on Nov. 11th, Dr. Donald Paterson will speak on Some Advances in Pædiatrics.

London Association of the Medical Women's Federation

The programme for the autumn session opens on Oct. 25th, when a presidential address will be delivered by Prof. Mary Lucas-Keene, entitled Anatomy, Now and Then. On Nov. 22nd Miss M. M. Chadburn, M.D., will read a paper on Mistakes, and on Dec. 15th Mr. A. S. B. Voge, Ph.D., will speak on Recent Research in Contraception. These meetings will be held at 8.30 P.M. at B.M.A. House, Tavistock-square.

British Institute of Radiology

The first meeting of the session will be held in the Reid-Knox memorial hall of this institute, 32, Welbeck-street, London, W., at 8 P.M. on Thursday, Oct. 20th. After the business part of the meeting is over a paper by Prof. Sidney Russ, D.Sc., and Miss G. M. Scott, on the *Differential* Action of Gamma Rays, will be read. On Friday, at 11 A.M., members are invited to visit the radiological department of the City of London *Hospital for Diseases of the* Heart and Lungs, Victoria Park. At 5 P.M. there will be a lantern demonstration on Radiology in Obstetrics by Dr. R. E. Roberts, and Dr. Ulysses Williams will give a brief clinical history of pathological changes recorded in a patient with radium needle in the heart for three years.

Appointments to the Cancer Hospital

It has been decided to increase the medical and surgical staff of the Cancer Hospital (Free), Fulham-road, London, and in our advertisement columns applications are invited for the honorary posts of neurologist, dermatologist, gynæcologist, and ophthalmic surgeon.

Child-Study Society, London

The first meeting of this session will be held at the Royal *Sanitary Institute, 90, Buckingham Palace-road,* S.W., at 6 P.M. on Thursday, Oct. 20th. Mr. P. B. Ballard, D.Litt., will deliver the Cockburn memorial lecture on Thirty Years' Progress in London Education. At the second meeting on Nov. 12th, Miss Anne Adler, J.P., will speak on Children's Courts.

St. Paul's Hospital

A post-graduate course in genito-urinary diseases is being held at *St. Paul's Hospital, Endell-street,* Shaftesbury-avenue, London, W.C., at 4.30 P.M. on Wednesdays until Nov. 30th. This course is free to medical practitioners and students.

National Hospital, Queen-square

Post-graduate courses are now in progress at this hospital They include out-patients' clinics daily (except Saturdays at 2 P.M., lectures and clinical demonstrations on the sam days at 3.30 P.M., pathological demonstrations on Wedne days and Fridays at noon, anatomical demonstrations o Thursdays at noon, and demonstrations of methods o clinical examination on Tuesdays and Thursdays at 5 P.M Further particulars may be had from the dean of the medica. *school, National Hospital,* Queen-square, London, W.C. 1.

Royal Institute of Public Health

A course of lecture-discussions on Mental Defectiveness as a Medico-Sociological Problem will be given at this institute, 23, Queen-square, London, W.C., at 4 P.M. on Thursdays from Oct. 27th. The opening lecture will be by Prof. R. J. A. Berry, chairman of the mental deficiency committee of the British Medical Association, and the other speakers will be *Dr. R. M. Stewart,* Dr. R. G. Gordon, Dr. C. P. Blacker, Dr. Letitia Fairfield, and Dr. Doris Odlum. There will also be a course in preventive medicine at 4 P.M. on Wednesdays from Oct. 19th. It will be opened by Sir Ernest Graham-Little, with an address on Preventive *Medicine and Education of Public Opinion.* Other lecturers will be Dr. D. Chalmers Watson, Mr. Malcolm Donaldson, Dr. H. Crichton-Miller, Prof. W. H. Maxwell Telling, Miss M. F. Forrester-Brown, Dr. C. P. Blacker, and Sir Pendrill Varrier-Jones.

Fellowship of Medicine and Post-Graduate Medical Association

A series of lectures on Renal Disease will take place at the Medical Society of London, at 4 P.M. on Tuesdays. *The* first lecture will be given by Dr. E. C. Warner, on Oct. 18th, on Medical Aspects of Hæmaturia. These lectures are free to members of the Fellowship. A fortnight's course in general medicine and surgery will take place at the Miller General *Hospital, Greenwich, from* Oct. 17th to 29th, occupying the whole of each day. There will be a morning course in diseases of children at the Hospital for Sick Children, Great Ormond-street, from Oct. 24th to Nov. 5th, and a course in neurology, at 5 P.M. daily, from Oct. 31st to Nov. 26th, at the West End *Hospital for* Nervous Diseases. From Oct. 21st to Nov. [illegible] in ophthalmology will be given at [illegible] phthalmic *Hospital.* A weekly [illegible] ctions in Obstetrics and Gynæco [illegible] ry *Abbots* Hospital. A course in [illegible] g *arranged* at the Hospital for [illegible] Further details of these courses may be had from the secretary of the Fellowship, at 1, Wimpole-street, London, W. 1.

Medical Cruise

The weekly review of medicine, *Bruxelles-Médical*, nounces the organisation of a medical cruise for Easter, 33. The itinerary, which commences at Marseilles on ril 8th, closes at the same port on May 1st, and will lude visits to Greece, Corfu, Venice, Sicily, and the riatic coast and the port of Rome. The accommodation reserved for medical practitioners or persons recommended by them, and for practitioners' families, and the lusive charge per head has been fixed at 3975 francs t class and 2100 francs second class. The steamer rtered has 190 first-class berths and 60 berths for dents. Those wishing to join the tour should apply to travel section of the Bruxelles-Médical, 29, Boulevard dolphe Max, Brussels, when further information will be pplied.

ng's College Hospital Dinner

The annual dinner of past and present members of the hool was held on Oct. 1st at the Connaught Rooms. . Godfrey de Bec Turtle presided. The guests of the ening were Mr. A. D. Power, vice-chairman of the committee of management of King's College Hospital, and Dr. D. Cowburn, coroner for South London. The chairman, proposing the toast of the medical school and the hospital, ter paying a tribute to Sir Watson Cheyne as a most stinguished member of the hospital who had died during e year, spoke of recent criticisms of the medical curriculum. Since medicine was a progressive science there uld be no finality about the curriculum, but he held that e end-product obtained—i.e., the newly qualified man or oman—showed that there was nothing radically wrong ith the curriculum. Doctors in this country were very rtunate, for there was practically no unemployment in e profession. After welcoming the guests, Dr. Turtle, behalf of 315 subscribers, presented to Dr. Willoughby yle a piece of hand-wrought plate in commemoration of rvices extending over more than 20 years as dean of the edical school. In thanking the donors, Dr. Willoughby yle gave reminiscences of many King's College Hospital en, notably Sir William Ferguson, Dr. Bentley Todd, Sir illiam Bowman, Lord Lister, Prof. Albert Carless, and r. Raymond Crawfurd, and gave special praise to the ice-deans who had worked under him—Dr. Harold Wiltshire, Dr. J. A. Drake, and Dr. H. A. Lucas. Dr. Drake, he new dean, gave a short account of the work of the edical school during the past year, the outstanding event f which was the beginning of the new buildings, which ill include a new pathological museum, research department, lecture hall, and common rooms. Three members f the school had been awarded travelling fellowships, and nce again a member of the school had also obtained the Murchison scholarship for clinical medicine.

Royal Dental Hospital

At the prize distribution of this hospital on Oct. 3rd, Mr. Harry Stobie, the dean, said that an important change had been made by the Royal College of Surgeons in the regulations governing the licence in dental surgery. Greater emphasis was to be laid on medicine, pathology, and bacteriology, in which there would in future be an examination. He reminded his audience that the new orthodontic department, under the directorship of Sir Norman Bennett, was to be inaugurated that night, and that it was hoped soon to create a special department for the treatment of diseases of the gums. The dean expressed his regret at the resignation of Mr. J. G. Turner, who had joined the staff in 1895, but said that his talents would still be available to the hospital as director of research. Mr. L. E. Claremont had been appointed hon. assistant dental surgeon, and Mr. C. Bowdler Henry and Mr. N. J. Ainsworth honorary dental surgeons. The dean in conclusion referred to the decision to discontinue the admission of women to the school. "It has been decided," he said, "that after March, 1933, no more women are to be admitted as students. Their absence will seem strange, for they have furnished a hard-working and painstaking body of students, and provided the hospital with some of its very best house officers." He also announced that the late Mr. R. Stanway Parris had left a legacy to found a prize to be awarded every year to the student showing the greatest inventive genius.

Lord Riddell, after opening the new orthodontic department and distributing the prizes, gave a short address on How to Teach the Public about their Teeth. He emphasised the necessity of enlisting the aid of the press in arousing interest, but maintained that no serious propaganda effort could succeed unless directed by the expert knowledge of the dentists themselves. At present no provision was made for the dental inspection and treatment of children under 5 and between the ages of 14 and 18. In 1930, of the 2,000,000 school-children who were referred for treatment, only about 1,250,000 actually were treated, and to achieve even this total each dentist had to deal with about 4000 children. To provide a complete school dental service, instead of the present 521 dentists, 2000 whole-time workers would have to be employed. These figures showed that there was little time for preventive work. Under the National Health Insurance scheme some £2,000,000 was at the disposal of the approved societies for dental treatment, but when the number of people to be treated was considered this was not so much as it sounds. Although dental treatment was offered at most antenatal clinics few expectant mothers realised the necessity for availing themselves of it. Lord Riddell said he thought that to remedy these conditions the dentists should form local organisations and strive to create a "tooth sense" among the public, for only then would public opinion demand greater facilities for dental treatment for everybody.

St. Thomas's Hospital Dinner

At Dorchester House, on Oct. 7th, Major-General Sir Guise Guise-Moores said that he was the first Regular Army officer to preside over the St. Thomas's annual dinner. His handling of the situation suggested that the experiment should be frequently repeated, while his anecdotes about the Secretary of State for the Dominions drew out all that was best in subsequent speakers. On turning to more serious subjects, Sir Arthur Stanley, treasurer of the hospital, said that investments worth nearly £50,000 had now been collected towards establishing a really good out-patient department, and that the cost of beer used in the hospital had risen from £30 in 1928 to something like £300 this year. Some of the staff seemed to be prescribing beer instead of drugs, and if this went on St. Thomas's was likely to become increasingly popular. In former days, however, beer had taken an even more prominent place; and here Sir Arthur produced some helpful facts from the first volume of Prof. F. G. Parsons's new "History of St. Thomas's Hospital." In 1584, it appears, the daily allowance of a pottle (four pints) to the hospitaller was raised to a gallon, and so far as he knew this ruling had never been rescinded; though if it were claimed to-day the amount would again be reduced to a pottle, he thought, in the interests of economy. In those days every patient had two pints of beer a day, or three pints in hot weather; and he had calculated that this arrangement would nowadays cost the hospital £12,000 a year. Prof. Parsons's history, continued Sir Arthur, proves that we are much older than Bart.'s. At the time when Rahere came into existence St. Thomas's was being rebuilt after a fire. It was then refounded by Edward VI., with, among others, two sisters to wash the clothes of the poor when necessary and when convenient ("I should think it was always necessary and never convenient") and one expert surgeon to *cure* their diseases ("not what all of you do"). One sober and pious man was also appointed to manage the funds, and Sir Arthur Stanley was delighted to feel that he himself was in the direct succession.

Dr. H. Gardiner-Hill, the sub-dean, reported for the medical school in the absence of Prof. L. S. Dudgeon through illness. After referring to the losses sustained by the retirement of Prof. Hugh MacLean, Mr. H. J. Marriage, and Dr. S. E. Dore, he spoke of the new appointment of Prof. O. L. V. de Wesselow as director of the medical unit, and of Dr. J. St. C. Elkington as assistant physician. Mr. D. F. A. Neilson and Mr. W. A. Mill had been appointed assistant surgeons in the ear, nose, and throat department, and Dr. G. B. Dowling physician in charge of the skin department. Of its old students the hospital had lost, by death, Dr. W. F. Haslam, Mr. Harold Low, Sir Robert Fox-Symons, Mr. J. F. Cunningham, and Dr. E. C. Freeman. During the year Sir Farquhar Buzzard had become physician-in-ordinary, Dr. Maurice Cassidy physician-extraordinary, and Mr. P. H. Mitchiner honorary surgeon, to the King. Sir Percy Sargent had been elected vice-president of the Royal College of Surgeons; Sir Charles Ballance had been awarded the Lister medal of the College; and among the students, Mr. T. A. Lloyd Davies had gained the gold medal in the London M.B. examinations. St. Thomas's had won the inter-hospital boxing for the sixth time in seven years; the sports shield for the third year; all three events of the inter-hospital rowing; and the lawn tennis and golf competitions.

Dr. Gardiner-Hill then proposed the health of the chairman, and he briefly replied.

Charles Mickle Fellowship

The Charles Mickle Fellowship for 1932 has been awarded to Dr. Gaston Leon Ramon, director of the Pasteur Institute Farm at Garches, France, for his work on diphtheria toxin and anatoxin. The fellowship, which is awarded by the council of the Faculty of Medicine of the University of Toronto to the member of the medical profession who in the preceding ten years has done most to advance practical medical knowledge, is the annual income from a legacy of 25,000 dollars left by the late Dr. W. J. Mickle.

University College, Cork

At recent examinations Dr. Denis Hegarty was approved for the diploma in psychological medicine.

Sun Pavilion at Rugby

On Saturday last the Princess Royal opened a new sun pavilion at the hospital of St. Cross, Rugby.

"Alexandra Day" London Collection

It is officially stated that the collections on "Alexandra Day" in London, on June 8th last, amounted to £48,268. To this had to be added collections by steamship companies of £570, and other income, £3566, making a total of £52,404. The expenses amounted to £8327. Of the balance, £5045 was given to charities in which Princess Victoria is especially interested, and £39,461 was distributed to various hospitals and charities.

Elsie Inglis Hospital, Belgrade

The municipality of Belgrade has taken over the Dr. Elsie Inglis Memorial Hospital at Dadinje, near Belgrade, and will run it for ten years. The municipality has also taken over all the debts of the hospital, which was closed down last July. Of the total debts, which are said to amount to approximately £160,000, the municipality is paying £80,000 immediately. The hospital will at once be reopened with 200 beds. It will retain the title of the Elsie Inglis Memorial Hospital, and will still remain nominally the property of the Belgrade Society of Women Doctors, reverting to them at the end of ten years, subject to the repayment of the debts paid by the municipality.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

The following appointments are notified: Surg.-Comdr. L. F. Strugnell to *Vivid*, for R.M. Infirmary, Plymouth.

Surg. Lts. A. Lawrence-Smith to *Pembroke*, for R.M. Infirmary, Chatham; R. Russell to *Codrington*, and A. H. O'Malley to *Vivid*, for R.N.B., Devonport, and for Devonport Dockyard.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. R. L. Stubbs is promoted to Surg. Lt.-Comdr

ROYAL ARMY MEDICAL CORPS

Maj. F. Worthington to be Lt.-Col.

Maj. J. B. Fotheringham to be Dep. Surg., R. Hosp., Chelsea.

Maj. F. M. Lipscomb, Dep. Surg., R. Hosp., Chelsea, relinquishes his appt.

Capt. G. R. Dobrashian relinquishes his temp. commn.

ARMY RESERVE OF OFFICERS

Lt.-Col. S. E. Lewis, having attained the age limit of liability to recall, ceases to belong to the Reserve of Officers.

TERRITORIAL ARMY

Maj. W. George to be Lt.-Col.

J. V. Bradley (late Cadet Corpl., King Edward's Sch. (Birmingham) Contgt., Jun. Div., O.T.C.) to be Lt.

Supernumerary for Service with the O.T.C.—Lt. A. J. Parer resigns his commn.

INDIAN MEDICAL SERVICE

Lt. (on prob.) J. R. Dogra to be Capt. (prov.) (on prob.)

COLONIAL MEDICAL SERVICE

Dr. E. Cochrane has been appointed Assistant Medical Officer of Health, British Guiana, and Dr. C. Ramdeholl, Medical Officer, British Guiana.

Dr. D. B. D'Alivis, Medical Officer, Grade 1, has been promoted to Inspecting Medical Officer, Ceylon.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 1ST, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 23 (last week 6); scarlet fever, 1792; diphtheria, 840; enteric fever, 68; acute pneumonia (primary or influenzal), 558; puerperal fever, 26; puerperal pyrexia, 71; cerebro-spinal fever, 29; acute poliomyelitis, 32; acute polio-encephalitis, 2; encephalitis lethargica, 12; continued fever, 1 (Doncaster R.D.); dysentery, 9; ophthalmia neonatorum, 74. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 4th–5th was as follows:—Small-pox, 42 under treatment, 1 under observation (last week 27 and 2 respectively); scarlet fever, 1472; diphtheria, 1505; enteric fever, 20; measles, 242; whooping-cough, 346; puerperal fever, 24 (plus 8 babies); encephalitis lethargica, 229; poliomyelitis, 6; "other diseases," 160. At St. Margaret's Hospital there were 19 babies (plus 10 mothers) with ophthalmia neonatorum.

Fifteen of the 23 new cases of small-pox were reported from the county of London—namely, Bethnal Green, 3; Hackney, 1; Islington, 3; Poplar, 8.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 5 (1) from measles, 1 (0) from scarlet fever, 16 (5) from whooping-cough, 22 (7) from diphtheria, *76 (20) from diarrhœa and enteritis under two years*, and 27 (5) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa were maintained, the highest figures being: Liverpool, 9; Birmingham, 7; Leeds, 5. Ealing and Tottenham each reported a death from enteric fever. Diphtheria accounted for 3 deaths each at Leeds and Liverpool, 2 at Manchester. Manchester reported 5 deaths from influenza.

The number of stillbirths notified during the week was 273 (corresponding to a rate of 43 per 1000 total births), including 30 in London.

Medical Diary

SOCIETIES

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, Oct. 18th.—4 P.M., Sir George Newman Harveian Oration.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 17th.—8.30 P.M., SURGERY: SUBSECTIO[illegible] OF PROCTOLOGY. Paper: Dr. R. C. Coffey (Portlan[illegible] Oregon, U.S.A.): Treatment of Cancer of the Rectum Other speakers: Mr. J. P. Lockhart-Mummery an[illegible] Mr. W. Ernest Miles.

TUESDAY.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8.30 P.M., PATHOLOGY. Presidential address: Prof A. Fleming: Lysozyme.

THURSDAY.—5 [illegible] ses at 4 P.M.) Dr. R. K [illegible] with Hæmochromatosis [illegible] Aldo Castellani 2. Tinea Im [illegible] ropean. Other cases will be shown. 8.30 P.M., NEUROLOGY. Presidential address: Dr. J. S. Risien Russell: Forty Years in Neurology.

FRIDAY.—10 A.M., OTOLOGY. Reception and discussion o[illegible] the Report of the Subcommittee for the consideratio[illegible] of Hearing Tests. 5.30 P.M., PHYSICAL MEDICINE Presidential address: Si [illegible] Stanton Woods 8.15 P.M., OBSTETRICS A[illegible] The Indications for an[illegible] Opener: Dame Louise [illegible] Mr. L. Carnac Rivett, [illegible] Dr. W. S. [illegible] S. G. Luker [illegible] Labour. 7 [illegible] Dr. Russell [illegible] To-day.

EUGENICS SOCIETY.

TUESDAY, Oct. 18th.—5.30 P.M. (at the Rooms of the Linnean Society, Burlington House, Piccadilly, W.) Dame H. Gwynne-Vaughan, D.Sc.: The Contributio[illegible] of Plants to the Study of Heredity.

HUNTERIAN SOCIETY.

MONDAY, Oct. 17th.—8.30 P.M. (at Simpson's Restaurant, Bird-in-Hand-court, 76, Cheapside, E.C.), Dr. Nathan Raw: *Human and Bovine Tuberculosis.* (Presidential address, preceded by dinner at 7.15.)

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.1.

FRIDAY, Oct. 21st.—5 P.M., Dr. G. H. Pearce: The Yorkshire Branch and the Society. (Presidential address.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 17th, to SATURDAY, Oct. 22nd.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Tues., Series of Lectures on Renal Diseases. Dr. E. C. Warner: Medical Aspects of Hæmaturia. (Free to Members.)—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Course in Gynæcology.—MILLER HOSPITAL, Greenwich, S.E. Course in general medicine and surgery. All day, demonstrations, operations, and lectures. Specially suitable for general practitioners.—St. John's Hospital, Leicester-square, W.C. Clinical instruction daily at 2 and 6 P.M. Lectures on Tues. and Thurs. at 5 P.M.—Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, All day course in Diseases of the Ear, Nose, and Throat.—London Light Clinic, Ranelagh-road, S.W. Lecture demonstrations on Physical Medicine. Mon. and Wed., 8–9 P.M.—The above courses are open only to Members.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
Tuesday, Oct. 18th.—5 P.M., Dr. H. T. Barron: Purpura.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
Wednesday, Oct. 19th.—4.30 P.M., Dr. G. R. Mather Cordiner: Radiological Investigation of Urinary Disease.

NATIONAL HOSPITAL, Queen-square, W.C.
Monday, Oct. 17th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Denny-Brown: Spinal Reflexes.
Tuesday.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Denny-Brown: Spinal Reflexes.
Wednesday.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. Collier: Clinical Demonstration.
Thursday.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Cranial Nerves and Special Senses.
Friday.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: Psychoneuroses.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
Thursday, Oct. 20th.—9 P.M., Mr. C. P. G. Wakeley: Head Injuries.

BRITISH INSTITUTE OF RADIOLOGY.
Thursday, Oct. 20th.—8 P.M., Prof. Sidney Russ and Miss G. M. Scott: The Differential Action of Gamma Rays.
Friday.—11 A.M., Visit to the radiological department of the City of London Hospital, Victoria Park, E. 5 P.M. (1) Dr. R. E. Roberts: Radiology in Obstetrics; (2) Dr. Ulysses Williams: Radium Needle in the Heart for Three Years.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.
Wednesday, Oct. 19th.—4 P.M., Sir Ernest Graham-Little: Preventive Medicine and the Education of Public Opinion.

NATIONAL COUNCIL FOR MENTAL HYGIENE.
Wednesday, Oct. 19th.—5.30 P.M. (at 11, Chandos-street, W.), Dr. Mary R. Barkas: Guilt.

CHADWICK PUBLIC LECTURES.
Thursday, Oct. 20th.—5.15 P.M. (in the Theatre of the Royal United Services Institution, Whitehall), Sir Humphry Rolleston: The Pioneers and Progress of Preventive Medicine.

MANCHESTER ROYAL INFIRMARY.
Tuesday, Oct. 18th.—4.15 P.M., Prof. E. D. Telford: Osteitis Deformans.
Friday.—4.15 P.M., Dr. A. H. Holmes: Demonstration of Medical Cases.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate.
Wednesday, Oct. 19th.—4.30 P.M., Dr. Vernon Smith: Nasal Polypi.

ANCOATS HOSPITAL, Manchester.
Thursday, Oct. 20th.—4.15 P.M., Dr. W. J. S. Reid: Anæmias of Chlorotic Type.

Appointments

Ormerod, G. L., M.B., Ch.B. Bristol, has been appointed Medical Officer to the Post Office, Westbury-on-Trym.

Vacancies

For further information refer to the advertisement columns.

Bangor, Carnarvonshire and Anglesey Infirmary.—Jun. H.S. £100.
Barry Urban District Council Surgical Hospital.—H.S. At rate of £200.
Bethlem Royal Hospital, Monk's Orchard, Beckenham, Kent.—Consulting Ophthalmologist.
Bradford Royal Infirmary.—H.P. and H.S. Each at rate of £135.
Beckenham, Bethlem Hospital, Monk's Orchard, Eden Park.—Res. H.P. At rate of £150.
Cancer Hospital, Fulham-road, S.W.—Hon. Neurologist, Hon. Dermatologist, Hon. Gynæcologist, Hon. Ophthalmic Surgeon.
Cheltenham General and Eye Hospitals.—Hon. Surgeon for Ear, Throat, and Nose Diseases.
Chester Royal Infirmary.—H.S. £150.
Eastbourne, Princess Alice Memorial Hospital.—H.S. At rate of £150.
Fareham, Hants, Knowle Mental Hospital.—Third Asst. M.O. £350.
Gloucester County and City Mental Hospital.—Jun. Asst. M.O. £350.
Gloucester, Gloucestershire Royal Infirmary, &c.—Hon. Anæsthetist.
Great Yarmouth General Hospital.—H.S. £140.
Hertford County Hospital.—Hon. Ophth. Surgeon.
Kidderminster and District General Hospital.—H.S. £150.
Lancaster Royal Infirmary.—Jun. H.S. At rate of £130.
Liverpool, County Mental Hospital, Rainhill.—Asst. M.O. £500.
Liverpool Hahnemann Hospital, Hope-street.—Res. M.O. At rate of £100.
Liverpool Royal Babies Hospital.—Res. M.O. At rate of £90.
Liverpool University.—Junior Lecturer for Dept. of Pathology. £300.
London County Council.—Asst. M.O. £475.
Manchester City Education Committee.—Asst. School M.O. £600.
Manchester Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.
Middlesex County Council.—Asst. County M.O.H. £750.
Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.
Nottingham, Harlow Wood Orthopædic Hospital.—Asst. to the Surgeon in Charge. £450.
Plymouth, South Devon and East Cornwall Hospital.—Res. Surg. O. and H.S. to Special Departments. At rate of £150 and £100 respectively.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—Hon. Asst. Surgeon to Nose, Throat and Ear Dept.
Putney Hospital, Putney Common, S.W.—Hon. Consultant Ophth. Surgeon and Oto-Laryngologist.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstetric Surgeon to Out-patients.
Reading, Royal Berkshire Hospital.—Res. Anæsthetist. £150.
Rochester, St. Bartholomew's Hospital.—H.S. At rate of £175.
Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Hon. Asst. Surg.
Royal Free Hospital and London (R.F.H.) School of Medicine for Women, W.C.—Sen. Assist. At rate of £250. Also Second and Third Asst. £300 and £270 respectively.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Two Registrars. Each £105.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. and H.P. £200 and £100 respectively.
St. Bartholomew's Hospital, London, E.C.—Asst. Phys.
St. Mary's Hospital, W.—Med. Supt. £400.
St. Mary's Hospital, Institute of Pathology and Research, Paddington.—Research Studentship at rate of £200.
St. Olave's Hospital, Lower-road, Rotherhithe, S.E.—H.P. At rate of £80.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100. Also Anæsthetist.
South Shields, Harton Hospital.—H.S. At rate of £150.
The Radium Institute, Ridinghouse-street, W.—H.S. At rate of £150.
Uxbridge, Hillingdon County Hospital.—Chief Asst. Radiographer. £225.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Anæsthetist. Also Sen. Res. M.O. £200.
Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.—Med. Supt. £1100.
Willesden, Municipal Hospital, Brentfield-road, Neasden, N.W.—Res. M.O. £250.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Chesterfield (Derby); Clay Cross (Derby); and Wolverhampton (Staffs).

A vacancy is announced for a Medical Referee under the Workmen's Compensation Acts (Northern Ireland) for the County of Fermanagh. Further information may be obtained from the Secretary, Ministry of Labour, Stormont, Belfast. Applications must be forwarded not later than Oct. 22nd.

Births, Marriages, and Deaths

MARRIAGES

Lachlan—Mansel.—On Oct. 8th, at Holy Trinity, Brompton, Kenneth Harry Lachlan, M.B., of Brentwood, to Lola, only daughter of the late Charles Mansel, O.B.E., M.D., and of Mrs. Mansel, Whitelyons, Brentwood, Essex.

DEATHS

Brown.—On Oct. 3rd, at Kennington Park-road, Thomas Brown, M.R.C.S., in his 80th year.

Carroll.—On Oct. 5th, at Harrington-gardens, S.W., of pneumonia, Colonel Frederick Fitzgerald Carroll, D.S.O., R.A.M.C., late of Egyptian Army and late of Moore Abbey Co. Kildare.

O'Connor.—On Oct. 7th, at Southsea, after a long and trying illness, Bernard O'Connor, M.D., D.P.H., M.R.C.P. Lond., and Barrister-at-Law, in his 84th year.

Stoney.—On Oct. 7th, Florence Ada Stoney, O.B.E., M.D. B.S. Lond., D.M.R.E. Camb., in her 63rd year.

Thorne.—On Oct. 6th, at The Mynde, Caerleon (Mon.), Atwood Thorne, F.S.A., M.B. Lond., aged 65.

Thorne.—On Oct. 4th, John Mills Thorne, M.R.C.S., L.R.C.P., of Brockham Green, Surrey, aged 70.

Tosswill.—On Oct. 3rd, at Queen Mary's Hospital, Roehampton, Major Leonard Robert Tosswill, O.B.E. Mil., M.R.C.S., L.R.C.P., D.P.H., of Mistletoe Farm, Cuckoo-hill, Eastcote, aged 52 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

DIABETES IN SCANDINAVIA

SICKNESS insurance on the one hand and insulin on the other, have profoundly changed the administrative problems of diabetes since the beginning of this century. A third factor, which some think contributes greatly to the seriousness of diabetes as a cause of disablement and death, is the big jump in the consumption of sugar per head in many civilised countries in our own times. The interplay of these and other factors as they affect the four Scandinavian countries, Denmark, Norway, Sweden, and Finland, is discussed in as many papers by their respective nationals, in *Nordisk Medicinsk Tidskrift* for Sept. 3rd. In Finland, it is stated, the consumption of sugar per head rose from 15·9 kg. in 1913, to 27·4 kg. in 1929. (In this year the consumption of sugar per head in the United States of America is said to have been 50·3 kg.) In 1890 only 10 diabetics received treatment in the hospitals of Copenhagen; at the present time there are between 5000 and 6000 diabetics in Denmark, and the central organisation for sickness insurance has an elaborate machinery for dealing with the insured diabetic worker. This organisation puts the services of its specialists at the disposal of general practitioners and does much else so that each case may enjoy the benefits of up-to-date knowledge adapted to individual needs. Before the introduction of insulin 89 per cent. of the insured diabetics applying for sickness benefit were treated as permanent invalids with a working capacity below a third of the normal. Thanks to the administrative machinery now at work, and the benefits of insulin which it is able to provide, only 38 per cent. of the persons applying for sickness benefit in 1930 had to be classed as permanent invalids.

The problem of the diabetic child in Norway is dealt with by Dr. Kirsten Toverud, who points out that insulin has produced an entirely new problem as far as the diabetic child is concerned. Formerly he just died, after an illness whose average duration was only 2·6 years according to Joslin. Now, with every year, there is a new crop of diabetic children capable of reaching healthy adult life if properly cared for. Even in such a small country as Norway the ranks of the diabetic child are being recruited by between 200 and 300 newcomers every nine years. Hitherto they have fared badly, about half of them dying for want of systematic supervision. Hence Dr. Toverud's advocacy of a combined diabetic home and dispensary where in-patient treatment can be supplemented by educational facilities so that the first period of hospital treatment does not entail too great a break in the child's life. Such a home, staffed by a specialist and a nurse, should also serve as a dispensary to which the child could come for periodic supervision.

The extent to which the diabetic problem in Sweden has grown from the administrative point of view, is shown by Dr. G. Kahlmeter, who states that while in 1918 only 30 insured persons received sickness benefit for diabetes, their number had risen to 246 in 1928. As for Finland, a paper by Dr. Holsti, shows that in Helsingfors the diabetes mortality for 1926–30 was higher than for any other quinquennium in the last twenty years. Yet it was only during these last five years that insulin had been extensively employed.

A NEW HEARING AID

IT is well known that the hearing of a deaf person may not be equally diminished through the entire range of audible frequencies; the subject of chronic middle-ear deafness, and especially of otosclerosis, is usually particularly deaf to the lower notes of the scale, while hearing high tones relatively well, whereas the sufferer from nerve-deafness fails to hear sounds of high frequency, such as the squeak of a bat or the song of birds. In a smaller number of cases, the hearing for different frequencies is much more irregular, and islands of hearing, or of deafness, may be found in various parts of the scale. With the ordinary micro-telephone type of electrical hearing aid, it is possible to amplify more especially the upper or the lower end of the scale, and this is sometimes done; but the instruments usually sold with a more or less "straight line" amplification have the defect that they magnify tones to which such a patient is not deaf, and may thus cause discomfort and even pain. If, however, the construction used in wireless receivers is followed, and valve amplification employed, it is possible to introduce filter circuits to give any characteristic desired. One difficulty in the practical use of such an apparatus has been that a current of at least 80 volts tension is necessary for the ordinary wireless valve, which involves the use of a prohibitively large and heavy battery; but the invention of the double-grid valve working at 25 volts has allowed an instrument to be put on the market of the size of a small box-camera, and weighing about four pounds. This has been produced by Messrs. Radio-Aid, Ltd., 4, Iddesleigh House, Caxton-street, London, S.W. 1, who are prepared to carry out the necessary tests before supplying the instrument, and who hope to develop an organisation by which patients living in the country, as well as those who live in London, can be tested. If such an instrument is carefully adapted to each individual patient after proper tests, it may prove to be of real service to those deaf people whose hearing varies much for different tones, and who are therefore unable to obtain help from the usual type of aid. Sufferers from senile deafness are not likely to obtain benefit from this instrument; and of others, only those whose deafness is severe are likely to avai themselves of it, for it is still a somewhat bulky piece of apparatus. The Radio-Aid Company have also designed a simplified form of audiometer, with which to make the necessary tests; it is named the audiograph, and is smaller and less expensive than the audiometers previously obtainable. Frequencies from 125 to 4000 cycles can be tested, and the volumes can be varied over 20 units of sound intensity. This instrument may commend itself to otologists for use in consulting rooms.

NEW PREPARATIONS

RADIOSTOL SOLUTION AND PELLETS.—These preparations of irradiated ergosterol, from the laboratories of British Drug Houses, Ltd., Graham-street, City-road, London, N., provide a pure crystalline vitamin D in two forms. The solution has a vitamin D activity such that one fluid ounce of the solution is equivalent in that respect to 2½ pints of cod-liver oil. The pellets contain the vitamin incorporated in cocoa butter, and one pellet is stated to have a vitamin content equivalent to that in an adult dose of cod-liver oil, and it is recommended that one should be eaten after a meal once or twice a day. The dose of the solution, prophylactic or therapeutic in intention, ranges from 5 drops daily to 10 drops three times daily.

(1) TAB. SODA RHEI CO.: (2) TAB. CEREVISIÆ CO. (Messrs. Barnold, Ltd., Milverton-street, Kennington, London). (1) This preparation in tablet form is a compound of bicarbonate of soda, carbonate of ammonia, rhubarb powder and peppermint oil, and the suggested dose is two or three tablets after meals. The assistance that would be rendered in certain forms of dyspepsia is obvious from the composition, and the tablets are a convenient form of administration. The advice that they should be given under medical direction is printed on the label. (2) This preparation is a compound of yeast and glycerophosphates, and attention has already been drawn to it in these columns (THE LANCET, Feb. 11th, 1928). Experimentation on mice and rats supports the manufacturers' opinion that in conditions of wasting or under-nourishment the tablets would be valuable. and they have received evidence suggesting that steady growth in the human subject has accompanied the use of the tablets.

ADDRESSES AND ORIGINAL ARTICLES

HE DEBT OF PREVENTIVE MEDICINE TO HARVEY AND THE COLLEGE OF PHYSICIANS*

By Sir George Newman, K.C.B., M.D. Edin.
F.R.C.P. Lond.
CHIEF MEDICAL OFFICER OF THE MINISTRY OF HEALTH

The facts of Harvey's life have often been recited ithin these walls and are well known to you. His me rests upon two achievements. He rendered the ollege of Physicians manifold services for half a ntury, and left it precious legacies and benefits. nd by his discovery of the circulation of the blood, hich Sir Thomas Browne preferred to the discovery f America, he became the founder of modern hysiology. He it was who opened wide for the science f medicine the gates of the Renaissance and revealed, ke Copernicus, a new orientation of human thought. he discovery itself was two-fold, that the blood hroughout the living body circulated from the heart hrough the arteries and back to the heart again hrough the veins, and that this movement was ropelled by the contraction of the heart. The stablishment of these two simple facts ended notions, heories, and doctrines which had endured for 1500 ears.

Galen and Harvey

Claudius Galen of Pergamum (A.D. 130–201), the reatest physician and the only experimental physio-ogist of the Roman world, and medical attendant f the emperor, Marcus Aurelius, had left stereotyped n his authoritative writings, the current views of the blood system. He demonstrated that the arteries contained blood and not air, he held that there were in the blood two tides, a general one and a pulmonary one, or rather that the body was irrigated by two kinds of blood serving a double purpose, one in the veins and one in the arteries. Both contained spirits, a "natural spirit" derived from the liver, an "animal spirit" from the brain, and a pneuma or "vital spirit" from the lungs, though the spirits in the two bloods were not identical. Galen declared also that there was communication through the apparently solid septum between the right and left ventricles, so that there was a partial percolation of the blood between the ventricles. He also claimed that the heart was a bellows, a suction and mixing tank in which the blood was both collected and heated, that the liver was the source and centre of the blood stream, that the veins had *no* valves, and that the blood system included pulmonary circulation. Now, with the exception of the teaching on the valves in the veins, this was the generally accepted belief before Harvey's time. It was not merely incorrect, but it stood in the way of any sound conceptions of physiology as a whole. Harvey's observations and experiments led him, first, definitely to exclude belief in various "spirits" in the blood, of which there was no evidence; secondly, he found no perforation of the interventricular septum and therefore no passage of blood could take place through it; thirdly, he had learned from Fabricius that the veins had valves, but he observed that they were so placed as to assist the blood in its return to the heart; fourthly, following Aristotle, he found the heart was a muscular pump propelling the blood to the tissues, the right ventricle to the lung and the left ventricle to the rest of the body, "and this is the sole and only end of the motion and contraction of the heart;" and lastly, he demonstrated that the whole mass of blood passed rapidly through the heart, the lungs, and the whole body. This was Harvey's demonstration of the mechanism of the circulation of the blood—pregnant with vast consequences, loaded with fate, something more than an interpretation of the special function of the heart and blood-vessels, more than the explanation of a mechanical act. For, in the first place, he arrived at his conclusion not from books nor logical deduction from facts, but by direct observation and experiment. In his little book, one of the most wonderful little books in the history of man, he sets out, step by step, the mechanical course of events in the cardiac cycle, illustrated by his own convincing tests and experiments. Thus he applied the scientific methods of Aristotle and Roger Bacon as the means of discovering the secrets of Nature. As a Vesalian anatomist he studied the anatomical morphology of the blood system in both man and animals; as a Galenic disciple he conceived of the function of the structures he found, and devised experiments, by vivisection or otherwise, for proving the validity of his interpretations; and he was one of the first to use physical measurement in biological inquiry. And, in the second place, he was never in any doubt that an understanding of the circulation provided the only basis for the intelligent study of the function of the blood itself and of the physical nature of man, of which he claimed the heart as sovereign. So long as the blood contained demons and spirits, was dual in character, and was static or tidal, and so long as the heart was a mixing tank and heat generator rather than the propeller of a circulating fluid, there could be no new physiology. Thus, whilst he neither foresaw nor formulated the subsequent research in physiological problems, he led men to expect an abundant harvest from his seed-sowing. How abundant and how varied will become evident to the reader between the lines of his famous book—see, for example, chapters VIII., IX., and XVI.

Harvey was heavily handicapped by ancient tradition. As Sir Michael Foster said, while Harvey was destroying Galen's doctrines he was wearing Galen's clothes and speaking with Galen's voice. He was also restricted by current knowledge, and could not, for lack of data, explain the ultimate intention of the design which he revealed, a restriction which still governs all scientific deduction. Nor could he complete his work, any more than any other explorer, for it was not a summary of existing knowledge from previous records, but an experimental stage in the development of a high argument. Harvey was a naturalist, like Newton or Darwin; his guiding star was Aristotle and his problem was to discover the nature of man by elucidating the properties and functions of the organs and tissues of the body; and, like all other discoverers, he entered into other men's labours, as his followers entered into his own.

The New Physiology: its Promise for Prevention

Here, therefore, was the opening of a new epoch. In 1622, six years after Harvey's first Lumleian discourse, and six before his book was published, came the demonstration of the lacteals and lymphatic system by which nutriment reached the blood (Aselli, Pecquet, and Rudbeck), an advance strangely criticised, and even unaccepted, by Harvey. In 1648 began the exploration of the chemistry of digestion and the blood (Van Helmont). Ten years later, and one year after Harvey's death, there came (with the microscope) the discovery of the corpuscles of the blood (Swammerdam, Malpighi), and with them the tremendous fact of its nutritive power, and shortly after, in 1661, Malpighi similarly revealed the fine capillaries in the tissues, believed in by Leonardo da Vinci and Harvey himself, but in the absence of the microscope not seen by them. All the deeper problems of physiology, as we now know, turn on the nourishment of the tissues themselves; the blood feeds them and acts on them, and they react on the blood. In 1662 came the first fruits of the mechanics of physiology (Descartes, Borelli), two generations after Galileo's initiation at Pisa and Padua; in 1669 new light was thrown, and thrown forward for a hundred years, on the physiology of respiration, on the purpose and process of the aeration of the blood in the lung, on its selective use of the oxygen of the air, on its carriage to the tissues by the blood, and on the resultant vitality and functioning of those tissues. The work of that bright school of young English physiologists, Boyle, Hooke, Mayow, and Richard Lower our own Fellow, worthy children of the great Harvey, was to be followed in the succeeding century by the actual separation of the gases which control life, carbonic acid, nitrogen, oxygen, and hydrogen. In the eighteenth century also there came the beginnings of the new knowledge of the nervous system and of digestion. In the middle of the nineteenth century Berthold opened a vast new field of research into the secretions of the ductless glands, and later Bernard, Addison, and Brown-Séquard established the foundations of endocrinology. The progress of physiology in England in recent times has been pre-eminent in quantity, quality, and scope, even in a time of universal scientific advancement.

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* The Harveian Oration delivered before the Royal College of Physicians of London on Oct. 18th.

From these illustrations of the kind of discovery that was going forward, I turn to mention some of their applications in preventive medicine. The organised attempt to prevent disease began in England in the fourteenth century when the nation was faced with the disaster of the Black Death, which reduced the population from four millions to two millions in a single year. From that dark day to the present there has been steady, and in recent years, rapid advance. From the sixteenth century the State itself took a hand in the business, and in our own time has secured the coöperation of the private practitioner, the research investigator, and the public medical officer. Their joint achievements have distinguished the last hundred years beyond other secular periods. I suppose that in no previous epoch in the history of mankind has there been such growth of the conception of preventive medicine and the practice of its art. It has saved millions of lives from premature death or crippling disease; it has extended the expectation of life for every infant born; it has, in Rudyard Kipling's phrase, "smote for us a pathway to the ends of all the earth," peopling whole tracts of the world which have formerly been decimated or deserted. In doing these things it has become a primary factor in the destiny of nations and in the future of man's life. It is difficult to make a selection of illustrations, from what Dryden would have called "God's plenty," to prove this growth of knowledge *or its applications*, because of their manifold an varied character. But I will offer for your consider tion three examples, and each of them shall be descendant of the achievement of the immort Harvey.

(1) THE PHYSIOLOGICAL BALANCE AS CONSERVATI OF HEALTH

Claude Bernard devoted his life to physiologi research in Paris and obtained a world-wide reput tion for four discoveries between 1843 and 1853 namely, the glycogenic function of the liver, t action upon digestion of the pancreatic juice, t nerve control of the walls of the arteries, and t displacement of the oxygen in the blood corpus in carbon monoxide poisoning. He died among vineyards in 1878. No one can consider the formi able and varied advances of modern physiolo without wondering whether it is possible to wea them into a synthetic "grand purpose," as Bor *foresaw it. Apart from his specific discoveries* t is what Bernard did, and it was perhaps his great service to physiology. "Animals have really t environments," he said, "an external environm in which the organism is situated, and an inter environment in which the tissue elements live. . *All the vital mechanisms of the body, varied as th* are, have only one object, that of preserving consta the conditions of life in the internal environment."

This is the synthetic principle of Bernard, that the vital functions of the body establish jointly constant and stable internal environment for organism which lives its life amid a variable exter environment. He was led to his conclusion by constancy of the proportion of sugar in the bl as regulated by the liver, but in the last half centu we have learned of the relative constancy of alkalinity and content of the blood (even in tra fusion), of the process of respiration, of bo temperature, of the nervous integration and regulat of the body, and of the control of the body by circulation in the blood of the endocrine secretio Wherever we turn we find evidences of this inter constancy, maintained by respiration, circulati the course of digestion and nutrition, the activit of the liver and kidney, the secretions of the ductl glands, and the total metabolism of the normal bo We must be reserved in attempting to assess findings of physiology, to say what is great and wl is small, but we shall be safe in accepting provisiona this supreme synthetic interpretation as among highest gifts.

The further Claude Bernard reflected upon deduction the more convinced he became both of validity and its practical application. He says 1865: "Physiologists and physicians gain maste over the phenomena of life by learning which con tions in the inner environment are normal and whi are abnormal. . . . It is in the study of these inn organic conditions that direct and true explanatio are to be found for the phenomena of the life, healt sickness, and death of the organism." He saw inde in his day that health and capacity depend upon th physiological balance of the constant internal enviro ment surviving and moving in a variable extern environment. He wanted men to understand it, regard it, and to live by it. We now see in our da that the mastery is being attained, in rationale and practice. In a word, we are beginning to apprehen the physiological life as the basis of health and as th foundation of preventive medicine. Claude Bernar like Harvey and Hippocrates *before* him, saw tha he physiological life, Nature herself, is the healer f disease and the protection against its invasion.

This conception was first put into practice in the fth century B.C. in the Aesculapian temples, the natoria of the ancient world; it was carried forward y the gymnastics of the Greeks, by the hygienic ision and education of Hellenism, by the substitution f natural ætiology for the supernatural dæmonic nagic and medicine of the East; it inspired the nitation of the Roman Empire, and there, and in he writings of Celsus, Pliny, and Cicero, it lay mbalmed for centuries. The conservation of health n physiological balance revived in the Renaissance nd was carried from Florence to Padua, and thus to Leyden and England. We may find it in the letters of Erasmus, in More's "Utopia," in Linacre's translaion of Galen's "Preservation of Health," scattered hrough Shakespeare's plays, in the writings of Sir Thomas Browne and Lord Bacon, in Sydenham's etters, in the great work on Hygiene of Peter Frank he Bavarian—everywhere for the rich and scholarly. Yet it still had to be given to the great mass of the people.

Its proof was sealed by Bachstrom, Lind, and Sir Gilbert Blane in their defence of the health and dietary of seamen; by William Cadogan of this College, who learned it in Leyden and was the first of our Fellows to apply it to mothers and children; by Sir John Pringle, who also found it in Boerhaave's classroom and decided to devote his life to its science, with the result that he reformed the health of the army, and laid a foundation of personal and public hygiene broader and deeper than any previous Fellow of the College. In our own day we have been the witnesses of the labours of a group of physiologists, some of them Fellows of the College, who have abundantly proved the validity of the constant internal environment by the new light which they have thrown upon the internal secretions, chemical and nervous regulation, and the nutrition of the body of man. They established not only our knowledge as to the basis of the conservation of health, but also the application of that knowledge to the direct prevention of disease. We now know that physical health and mental capacity depend upon a mutual contribution of nutrition, hormones, nervous regulation, and oxygenation of the circulating blood, as we also know how these factors can be made direct instruments of the prevention of disease, and thus fulfil the office of medicine, "to tune this curious harp of man's body and reduce it to harmony."

(2) THE CAUSE AND CONTROL OF INFECTIVE DISEASE

Harvey held that the circulating blood carried infection. No group of men followed more faithfully the teaching of Harvey and Sydenham than the physicians of the eighteenth century. By that time the circulation of the blood was fully accepted, and Harvey's mode of workmanship had become part of English tradition, and particularly the standard of this College. Glisson, Regius professor of physic at Cambridge when Harvey was travelling in Europe, was incited by Harvey's example in thorough investigation, and his work on rickets brought together for the first time in England the anatomical and clinical characters of a disease. One of his contemporaries, who also became President of the College, was Sir Edward Greaves, who published in 1643 the first English description of epidemic typhus fever as he saw it in the King's Army at Oxford. Sydenham attempted to arrive at general laws as to the prevalence and course of epidemic disease. Here are three types of investigator who set agoing the annalists of the eighteenth century; they explored the circumstances and clinical features of infective disease, and observed their relation to external environment, to seasons, and to meteorological conditions. Further, Huxham investigated typhoid, typhus, Devonshire colic, scurvy, and diphtheria; Heberden, chicken-pox, measles, epidemic colds, and diphtheria; Fothergill, epidemic sore-throat; Haygarth, small-pox and typhus; Pringle, gaol fever, dysentery, and influenza; Sir George Baker, Devonshire colic and scurvy; Edward Jenner, small-pox and cow-pox; and Willan, skin diseases in London. The seventeenth and eighteenth centuries were, as Charles Creighton demonstrated to us, a new era of epidemics, which became more obvious after the disappearance of the plague. Much was conceived tentatively by way of prevention, and there was a remarkable output of clinical observation, as necessary to-day as then, particularly in differential diagnosis, the effects of treatment, and prognosis. What was lacking was any exact knowledge of causation. In spite of that, the practical sense of the English did, in fact, achieve before the end of the eighteenth century, two significant conquests in this long list of diseases—namely, the control of scurvy and of small-pox.

The mighty movement which changed the whole situation was the advance of bacteriology. It began with surmises and conjectures in the sixteenth century. Fracastor in 1546; Borelli a hundred years later; in 1676 Leeuwenhoek, of Delft, who saw living bacteria by the use of a lens made by himself, provided surmises and conjectures, but it was a long time before the relationship of these living "animalcula" came to be associated with disease. In 1835 Agostino Bassi found the muscardine of silk-worms to be caused by germs, and so became the founder of the germ theory; Pasteur, by his study of fermentation and viruses, and Koch by his ingenious technical methods of isolation proved the case. Only as we view at a distance their labours in the last half of the nineteenth century are we able to appreciate the revolution in the science and art of medicine which they achieved. If we reflect on the fact that in the brief period of 15 years (from 1880–1895) there was discovered the bacterial cause of nine diseases: typhoid fever, tuberculosis, suppuration, glanders, cholera, diphtheria, tetanus, Malta fever, and plague; and that in the same period there was provided the initial form of protective inoculation against anthrax, rabies, diphtheria, tetanus, cholera, and typhoid, we shall understand the magnitude of the modern conquests of preventive medicine.

Much had to be done, much still remains to be perfected, but here we are in an altogether new kingdom, the control by the body of infective processes. But the discovery of the cause of disease lies at present largely beyond statistical calculation, for which indeed the data are often unavailable. It is a story of laboratory exploration, but it exerted an effect outside the laboratory. For the discovery of causal pathogenic organisms immediately led to finding them in the tissues of the affected person. In typhoid, tuberculosis of the lung, diphtheria, tetanus, and plague there arose forthwith the need for a bacteriological diagnosis as well as a clinical. The physician called in the bacteriologist, and the relation of bacteriology to clinical diagnosis became a subject of lively discussion. It stimulated inquiry into possibilities of destroying the bacilli before they entered the body, into the channels of infection and their control, into inoculation and vaccination, and into antitoxin treatment. Lister's application of antiseptic principles exerted no doubt a highly beneficial effect upon surgery, but its influence was much wider, for it demonstrated a means of control of almost universal application.

Only a generation has passed since the bacterial cause of disease has been our possession. Yet there has been time to assimilate the new knowledge and correlate it with the old, to recognise that in the production and determination of disease the *seed is one factor and the soil another.* The study of the interaction between them has been illuminating and profoundly instructive. It has confirmed and even fortified the Hippocratic and Harveian confidence in the nature of man's body. Though we cannot as yet assess the degree of control with which this new knowledge empowers mankind, we are not without encouragement provided by a decline in the incidence and mortality of disease, proof of which is supplied by the latest returns of the Registrar-General, though we must beware of *deducing from these returns that certain remarkable* declines in annual mortality are wholly the result of human action.

(3) IMMUNITY

A third example is artificial immunity, an acquired defence of the host against harmful influences of bacterial origin, perhaps the greatest single advance in modern preventive medicine. It was known before Sydenham's day that an attack of measles or small-pox naturally protected the patient from further attack, and Harvey knew that the blood had protective qualities. But it is only in our own times that explanation of this property has been attempted and found. Pasteur used to say that he received part of his inspiration from Jenner and his empirical experiments in vaccination. Pasteur's chicken-cholera vaccine was in fact comparable to variolation, the inoculation of an attenuated variola. This was the first step in the new movement. In 1880–81 Lister demonstrated the bactericidal property of ox-blood. He showed that it had no inherent tendency to "putrefaction," and that, different from milk, it could indeed withstand "seeding" with tap water and even dust, without apparent decomposition. "These two great truths," he declared, "have been taught us by advancing science: that normal serum is not a good soil for the development of attenuated microbes, and that bacteria introduced among the tissues, if in not too concentrated a form, are disposed of by phagocytosis." Metchnikoff had already described the phagocyte.

Here we have the four facts which formed the basis of the organised exploration which began in our own time—the natural protection provided by an attack of measles or small-pox, the attenuated virus of Jenner and Pasteur, the bactericidal defences of the blood itself, and the phagocytosis of Metchnikoff. Recent study has shown that phagocytosis is more of a physico-chemical effect of various polynuclear cells than, as Metchnikoff assumed, a specific "voracious" faculty of certain particular leucocytes only. It has also shown that the bactericidal property of the circulating blood finds expression in antibodies and opsonins of various kinds, the degree of resistance set up being favoured by its constant internal environment, by its normal antibody content, stimulated by antigens, and by the presence of antitoxins. Such resistance is reduced by any lack of balance due to defective nutrition, to intercurrent disease, or to the susceptibility of the individual.

We now have at command protective inoculation against a number of diseases—e.g., small-pox, anthrax, plague, cholera, typhoid, rabies, and diphtheria, by attenuated virus in small-pox and rabies, and by the dead bacillus as immunising agent in the other conditions. In all these cases the antibodies in the blood do not act alone in antagonising the toxic invasion, they are aided by accompanying cellular changes in the body itself. In the development o acquired immunity we see, in fact, an intensificatio of the defensive actions and properties possessed b the body in its natural state, which continue afte the antibodies have disappeared from the blood. I is common knowledge that the principles of activ immunity have now been directly applied, as a resul of the work of Sir Almroth Wright, in the treatmen of already existing infective disease in the form autogenous strains of the infecting organism, disi tegrated or killed. These act by aiding the loca defences of the tissues or stimulating the productio of antibodies in the blood. Such autogenous vaccin have been extensively used in the treatment of suc conditions as *acne, boils, tuberculosis, and* strept coccal, coli and gonococcal infections. The discover first, that bacteria invading the body produced gener effects by secreting a toxin which might pass into th system, and secondly, that the presence of such toxin stimulated in the normal body cells the produ tion of antitoxins and other antibodies whi antagonise or destroy the obnoxious toxin, is one the most arresting and remarkable of all the revelatio which the new knowledge has brought us. It is inde a confirmation and fulfilment of the Hippocrat doctrine that health and disease are both in them selves "divine," and the body is itself the healer disease.

Thus the physician is now active in the preventi aspect of healing; his drugs and remedies are n only prescribed for their preventive propensity, b they are specifically preventive in purpose. He n only appreciates the ramifications of infection, b he is vigilant to learn of the channel or vehicle which his patient has been infected. He takes t new knowledge of immunology and bends it prevention—he has become an immunisator. builds up the natural immunity of the body increasing the powers of resistance of the inter environment by recommending a physiologi regimen, and he supplies by artifice an acquir immunity. We are the witnesses of a new approa to disease, a new birth of medicine, *a treatm which is preventive,* undreamed of by Harvey a unavailable in this College two generations ago. all know the results, some of them dramatic and h toric throughout the world, some of them loc prosaic, and obscure, but on the whole profound beneficial in the reduction of the incidence a mortality of infective processes.

The Preventive Work of the College of Physicians

Before the days of the existence of the medic department of the Privy Council in 1858 the Colle was consulted frequently in regard to the practice *preventive medicine and the* administration of publ health measures by the City of London, the Priv Council, and Parliament. Its internal and design polity in respect of the Pharmacopœia, the registratio of the causes of death, implying the nomenclatu of disease, the prevention of plague and small-po and the control of alcoholism, has necessarily led to take an historic share in preventive medicine.

(I.) THE PHARMACOPŒIA

In the Letters Patent constituting the College in 1518 there was included a provision consigning to four persons named by the College the duty of "the correction and government of physic and its professors (practitioners) together with the examination of all medicines and the power of punishing offenders by fine and imprisonment." This duty, confirmed by statute in 1522, was discharged by the College for 340 years, until 1858. In 1540 the College was empowered by statute to destroy any defective drugs, and its authorised visitors were the forerunners of the inspectors and analysts under the Sale of Food and Drugs Act of 1875 and succeeding legislation. In 1585 the College found it necessary to fortify the censors, and guide all others concerned, by publishing a uniform Pharmacopœia, the drafting of which was assigned to a committee of six Fellows. Circumstances occurred to delay their labours, and the matter remained in abeyance until 1614, when a new committee of eight Fellows was appointed, including Harvey himself, and in four year's time they produced the first Pharmacopœia, Sir Theodore Mayerne writing the dedication. It comprised 1028 different articles, "some of them of extraordinary and even revolting character," and 200 of the preparations contained from 10 to 50 ingredients each. Subsequently nine editions were published from 1650 to 1851. The Medical Act of 1858 transferred the duty from the College to the General Medical Council.

For the first 170 years these Pharmacopœias followed the traditional custom derived from the Arabians, being an inventory of drugs used and approved for the time being. But the editions became both more scientific and more directional in 1788 and 1836. The chemical learning of the day was steadily introduced into the Pharmacopœia under the labours and erudition of George Baker, George Fordyce, Tuthill, Ayrton Paris, and Clement Hue. The last two held strong views on the uses of materia medica. In 1819 Paris was appointed to a special lectureship in pharmacopœia at the College, and delivered his revolutionary doctrines on "The Philosophy of the Materia Medica"—an epoch in the history of the science and art of prescribing, as Munk has said. The Pharmacopœia of 1836 was marked by the admission to its pages for the first time of the alkaloids, aconite, quinine, morphia, strychnine, hydrocyanic and phosphoric acids, iodine and bromine preparations, creosote, ergot, and lobelia. Thus was introduced into practical pharmacology in England that new philosophy of the art of therapeutics which is designed to control the internal forces which affect the body or its organs injuriously by means of counteraction, neutralisation, or prophylaxis.

Since the General Medical Council took over from the College, under statute, the duty of authorising a Pharmacopœia they have produced six British Pharmacopœias from 1864 to 1932. If the latest and current edition be compared with the Pharmacopœia of 1836 it will be observed that inter alia it is characterised by two new features. There has been a substantial increase in the number of authorised prophylactic drugs, such as cod-liver oil, liver extract, salvarsan, sanocrysin, atropine, and glucose; and it contains for the first time a new category of biological agents of a directly preventive nature, the use of which has greatly strengthened what the compilers of the reformed Pharmacopœia of 1836 called "the armamentarium of the physician," particularly in respect of artificial immunity. For among these biological substances are the vaccines, antitoxins, and antibacterial sera, thyroid and parathyroid extract, insulin, adrenalin, and pituitrin, now standardised under the Therapeutic Substances Act of 1925.

(II.) REGISTRATION OF CAUSE OF DEATH AND NOMENCLATURE OF DISEASE

The year before Queen Victoria came to the throne Parliament passed an Act for the registration of births and deaths, a natural corollary to the census of 1801. Births and deaths had been partially registered in the parish records of England since the days of Queen Elizabeth. But many of these church registers having been lost, the Act of 1836 was passed to make the record secular and complete, independent of religious opinion. Thus did the legislature of England, in the words of Dr. William Farr, "take the lead in advancing the health of Europe."

But it was not the Act of 1836 which secured this, for it alone was insufficient. In the spring of 1837 the Registrar-General wrote to the College of Physicians soliciting the aid of "every practising member of any branch of the medical profession" in sending to the local registrar of deaths "a written statement of the *cause* of death" of any person upon whom he was in attendance. On May 1st Sir Henry Halford, the President, jointly with the President of the College of Surgeons (Sir Astley Cooper) and the Master of the Apothecaries (Dr. Hingeston), issued their memorable circular to the profession asking all practising medical men to enter on the death certificate the authentic cause of death. They claimed that the important object of such returns, when collated, would be more accurate knowledge (1) of the comparative prevalence of various mortal diseases in England and Wales; (2) the localities where they prevailed; and (3) the age, sex, and condition of life principally affected. Here, then, was a statistical method which, as Farr pointed out in his report to the Registrar-General in 1839, gave the State for the first time the necessary foundation for modern nosology and epidemiology, for treatment and for prevention. For the voluntary practice thus initiated by the College (fulfilling, as it happens, an intention declared by the College in the sixteenth century) the Registrar-General officially and publicly thanked the medical profession, and after a generation of experience Parliament, in 1874, made statutory provision requiring the *medical certification of the cause of death* in all cases. It is this registration of the *cause* of death by the medical practitioner which lies at the back of the application and direction to-day of public health measures for communal health.

When at the Registrar-General's request, Farr undertook the task of classifying the causes of death returned by the medical profession in 1837, he was faced with the immediate necessity of an appropriate Nosology, using at first that of Cullen. Subsequently he tried the "Physiological System of Nosology" of 1820 by Dr. Mason Good, dedicated by permission to the College of Physicians, of which he was a distinguished and scholarly licentiate. In 1840 Farr adopted a classification of his own design, "the English classification," revised after the international statistical congress at Brussels in 1856. In the following year a letter was addressed to the College of Physicians by the Epidemiological Society, representing the medical advisers of the Army, the Navy, the Registrar-General, and the East India Company, asking the College to "take charge of drawing up a Nomenclature of Diseases for use in the military services and in civil life." In response the College appointed a committee on July 9th, 1857, of which Dr. Francis Sibson, friend and pupil of Thomas Hodgkin, was secretary. Its meetings were suspended temporarily in 1858, but by 1869 the new nomenclature of diseases was ready, and on March 6th Her Majesty's Treasury approved of its gratuitous distribution among 20,000 registered practitioners in the United Kingdom. Sir Thomas Watson was chairman of the committee and Dr. Farr was the principal adviser. Statistical data and uniformity of nomenclature are great things, but accurate diagnosis and the correct certification of the cause of death are greater. For this is the first and most fundamental factor in any scientific form of control. It was largely because of this public-spirited contribution by the College of Physicians that the Registrar-General's reports became the basis of the application of preventive medicine in England and in civilised States throughout the world.

(III.) THE PLAGUE

The contribution of the College to preventive medicine was, however, even more direct than its polity. The plague was prevalent in England from 1348–1666. From the experience of Wolsey and letters from Erasmus and Sir Thomas More, we know that when the College was founded by Henry VIII. there was prevalent in London the third outbreak of the sweat and the plague (which prevented the king from coming to London). In 1518 the King himself, on the advice of his physicians, had recommended the marking of plague-infected houses and preparatory arrangements for quarantine, a recommendation which became the first plague order in 1543. In 1529 the King urgently consulted his College of Physicians as to what means they advised for the prevention of this disease. The Privy Council in 1532 also on their advice ordered the issue of plague-bills, the first of a long series which were succeeded by the registration of plague deaths in parishes (1539). In 1563 the College was satisfied that there was some relation between animals and human plague, and recommended the destruction of dogs and cats. Under the more vigorous preventive policy of Elizabeth the Privy Council instructed the Lord Mayor of London to close infected houses, consider the necessity of establishing an isolation hospital, and appoint special medical officers to deal with the disease. The Lord Mayor consulted the College as to the number and personnel of these officers.

From 1630 to 1665 the College of Physicians issued advices periodically as to the prevention of plague. It is true that many of their recommendations were derived from former practices of somewhat mediaeval character, such as the sovereign remedy of flight, the marking of infected houses and persons, the appointment of "searchers," strong-smelling fumigations, and the necessity of sanitary cleanliness. The control of animals and tainted food, the removal of "annoyances," and the speedy burial of the dead emerged from current belief that they served as sources of infection. The medical profession were by no means unanimous as to the best course to take, and Fellows of the College were not always, then as now, in complete agreement with one another. They were roundly abused by Dekker, the dramatist. Yet we have from Licentiates or Fellows of the College the best records of current medical knowledge of plague. Thomas Lodge first studied arts at Oxford and law at Lincoln's Inn. He was a poet and dramatist, and from his *Euphues Golden Legacie*, Shakespeare constructed his *As You Like It*. Subsequently he studied medicine at Avignon and in 1603 he wrote a treatise on the plague, of which he died in 1625. Like Skene, 30 years before, he notes that a prevalence of plague is indicated by rats forsaking their holes. He advocates as preventive measures the removal of shambles from the city, sanitation, ascertainment of plague cases, the disinfection of bedding and clothes, and the discreet but compulsory removal of patients to isolation hospitals to be publicly provided.

Sir Theodore Mayerne advised the King as to prevention of the plague in 1631, and Wharton, Witherley, and Hodges, also Fellows of the College, remained in London during the plague of 1665 and were active in the prevention of its spread. Richard Mead did not live in the time of the plague, but owing to public alarm as to possible invasion in 1720 he was, whilst censor of the College, commissioned by the lords of the Regency to advise the Government, and in his Discourse on the Plague he summarised the medical knowledge of his age.

He recommended the appointment of a Council of Health to ascertain and register the cases and provide for their isolation, and for the destruction of infected goods, and the disinfection of bedding and clothing. The suppression of vagrancy and the institution of sanitary cordons round infected districts and quarantine, also among the recommendations, have proved the ancestors of modern methods.

(IV.) EXCESSIVE SPIRIT DRINKING

In 1725, under the presidency of Sir Hans Sloane, a representation from the College upon the evils produced by the excessive drinking of spirits resulted in the passing of the Gin Acts, the suppression of gin-shops, and the restriction of private retail sales. In face of a similar social problem, 190 years later, a group of Fellows of the College were consulted as to the appointment and work of the Liquor Control Board (1915–1918). The effect of that Board in securing a sober people is well known to us all.

(V.) SMALL-POX AND VACCINATION

Inoculation of diminutive doses of small-pox serum for the prevention of natural small-pox was introduced into England by Timoni, a Greek of Constantinople, in 1713, and was practised tentatively, and then fell into abeyance by 1740. It was reintroduced by Kilpatrick of South Carolina, and Frewen, a pupil of Boerhaave in 1743. In 1754, when small-pox was a scourge in England, the College of Physicians in a formal minute pronounced inoculation to be "highly salutary to the human race." In 1755 Dr. Robert Taylor delivered the Harveian Oration, remarkable for its vigorous promulgation of the practice of inoculation. Forty-three years later (1798) Jenner announced his method of vaccination with the serum of cow-pox as a means of protecting the human constitution from the infection of small-pox. This was substituted for the method of small-pox inoculation. Jenner also began forthwith the organisation of communal vaccination. Four years afterwards (1802) the House of Commons resolved, on the advice of the Prime Minister (Mr. Addington) that on Jenner's petition (March 22nd, 1802) it would call for a report from a committee of the House on the validity of vaccination. Subsequently Parliament preyed the King to "direct His Royal College of Physicians to inquire into the state of the vaccine inoculation in the United Kingdom, and to report their opinion as to the progress which it has made, and the causes which have retarded its general adoption." The College replied in 1807, and their memorable answer, which was the beginning of their leadership in small-pox prevention, closed with the following words :—

> "From the whole of the above considerations, the College of Physicians feel it their duty strongly to recommend the practice of vaccination. They have been led to this conclusion by no preconceived opinion, but by the most unbiased judgment, formed from an irresistible weight of evidence which had been laid before them. For, when the number, the respectability, the disinterestedness, and the extensive experience of its advocates is compared with the feeble and imperfect testimonies of its few opposers; and when it is considered that many, who were once adverse to vaccination, have been convinced by further trials, and are now to be ranked among its warmest supporters, the truth seems to be established as firmly as the nature of such a question admits; so that the College of Physicians conceive that the public may reasonably look forward with some degree of hope to the time when all opposition shall cease, and the general concurrence of mankind shall at length be able to put an end to the ravages at least, if not to the existence, of the small-pox."

Following on this declaration signed by Sir Lucas Pepys, president of the College, there was a debate in the House of Commons on June 9th, 1808, in which Mr. Rose secured the assent of the House to a resolution, "that public benefit would be derived from the establishment of a central institution in London for the purpose of rendering vaccinia inoculation generally beneficial to His Majesty's subjects." On this resolution the Privy Council called upon the College of Physicians to appoint a medical board to inquire into the methods of vaccination generally used, with their success or failure, and to organise and set in action a central institution for carrying on in London, under their own immediate superintendence, the practice of vaccination, and for distributing vaccine lymph to every part of the Empire. In 1858 Mr. John Simon, the medical officer of the Privy Council, was associated with the board; it made its last report to the Privy Council in 1860, and in the following year, on the death of the registrar, Dr. Clement Hue, the Privy Council itself took "the affairs of the Establishment under their own immediate direction."

Thus for more than fifty years the College of Physicians became the pronounced advocate of vaccination, undertook to initiate the control of the national movement for vaccination, inquired into its results, supervised its working, and standardised and distributed the lymph. Subsequently, these duties were undertaken by the Privy Council from 1861 to 1871, by the Local Government Board from 1871 to 1919, and since that date by the Ministry of Health.

Closely allied to this remarkable service of the College was their action a generation later in respect of antitoxin for diphtheria. In 1886 a deed of arrangement was drawn up between the Royal College of Physicians and the Royal College of Surgeons for the establishment of a conjoint board for the purpose of conducting their joint examinations or "for any other purposes of the Colleges as they may from time to time jointly agree." One of these other purposes was the establishment of laboratories for investigational work. In 1890 Dr. (afterwards Sir) Sims Woodhead was appointed as director, and in 1894 he and his colleagues, with the generous financial assistance of the Goldsmiths Company, began their work in the standardisation, preparation, testing and distribution to London hospitals of antitoxin for diphtheria. This voluntary task of the College proved invaluable in promoting the usage of this therapeutic and prophylactic means, hardly less effective in result, though proportionately less in degree, than the establishment of vaccination for small-pox. In 1890 the conjoint board of the two Colleges rendered powerful aid to the administrative and educational aspects of communal preventive medicine by creating a special diploma in public health (under the Medical Act, 1886), followed subsequently by a comparable diploma in tropical medicine and hygiene

Communal Medicine and Individual Practice

Throughout its history the College of Physicians has been the foster-mother of sound medical practice, and in each of its four centuries has nurtured and cultivated the Renaissance spirit of true learning and inquiry. When Linacre met Hermolaus Barbarus in the Vatican library he contracted a friendship which influenced his life, and in Florence, Rome, and Padua he drank at a more living source than he had found in Oxford. Its dynamic effect not only revived the spirit of the Oxford Reformers, but had much to do with the foundation of this College and the introduction of Greek medicine in England. From its earliest years it has had many Fellows or Licentiates who have contributed to the advancement of the science and art of medicine, and not a few who have moved forward our knowledge in physiology and pathology and their applications to preventive medicine. Among them should be especially commemorated the group of men, such as Harvey, Chamberlen, Manningham, Smellie, and William Hunter, who prepared the way in obstetrics for the prevention of puerperal fever; Lodge, Hodges, Wharton, and Mead, who established the defences against plague; Sydenham, Greaves, Heberden, Fothergill, Murchison, Willan, and Watson, who *differentiated the epidemic fevers and laid the basis* for their control; a long line from Harvey to the present day, who opened the doors of physiology; and George Baker, John Pringle, Southwood Smith, Edmund Parkes, J. H. Bridges, Patrick Manson, William Leishman, and David Bruce, devoted Fellows of the College, who left behind a splendid harvest of national and international preventive medicine. Named or unnamed these are the workers whom we commemorate to-day, and whose works do follow them. But their works follow them in a new world. The extraordinary advance in the science and art of medicine has supplemented the work of the family physician of a former day by providing an extensive system of general and special hospitals, laboratories, sanatoria, and clinics, with a no less comprehensive system of specialists on the one hand, and public medical services on the other. Yet the family physician will always remain the most economic and effective physician for the vast majority of human ailments. In any event, the registered medical practitioner will be the first into whose hands will fall the recognition and treatment of the beginnings of disease. Moreover, the practice of medicine must always remain both *inductive* and *individualistic.*

There is evidence that the State appointed public doctors at least as early as Democedes (c. 510 B.C.) and the custom was extensively followed throughout the Roman Empire. In England the first obvious intervention by the State was in the sixteenth century on account of the existence of certain foci of disease among the poorest and most vagrant class of the community, neither able nor willing to obtain medical advice and yet contributing to the spread of disease in the community. It became apparent that the State was the only available authority which could direct the application of advancing medical knowledge and practice to the problem. In the first half of the nineteenth century such action of the State became more formal and statutory, both in providing medical and surgical treatment for the poorest classes and in formulating sanitary measures to protect the whole community against insanitary environment or the spread of infectious disease. This profound and far-reaching development of a communal medical service has proceeded alongside the work of private practice. Since 1834 there has been a poor-law medical service, and out of it a few years later emerged the public health service, which in recent times has incorporated a number of special medical services, including those for maternity and child welfare, for the school-child, and for health insurance, each of which had begun in a voluntary form and grown spontaneously before the State had recognised its validity. No single person and no single movement is responsible for this creation or its development; it has emerged as part of the social evolution of the time in which we happen to live. Speaking generally, however, it is expedient that certain principles should be recognised in any public medical service.

(*a*) The province of the State should be to bring the physician and the patient together under circumstances which will be acceptable to the patient, whilst facilitating and safeguarding the work of the physician.

(*b*) The State should encourage the provision of the necessary hospitals and clinics with proper equipment.

(*c*) No one, not even the State, should come between the physician and his patient, whether in private or in public practice. For the physician (and not the agency, whether voluntary or statutory, which brings his patient) must both diagnose the morbid condition and prescribe effective treatment.

(*d*) The State should exercise supervisory administrative control if the medical service in which the physician is engaged is communal or is paid for, partly or wholly, by rates or taxes.

There is nothing here which in principle departs from the primary and paramount benefit of the patient, or invades the reasonable prerogatives of the physician. Indeed, in the English health insurance system there is free choice of physician and patient; advice, treatment, and prevention within the compass of the knowledge and experience of the private practitioner; and the maintenance of the responsibility of the patient, through his contributions, for the payment of the practitioner. Moreover, the system is such that it imposes a check on excessive claims of patients and on protracted benefit received during incapacity; in administration it is free from political control, for the management is in the hands of the contributor and the physician, as well as statutory bodies and the State; it provides for the education of the people in hygiene by their own physicians; and, lastly, it is so designed as to provide facilities for the initiation of research, and the keeping of fuller clinical records than in the past. Such a system cannot *insure*, or indeed be ultimately effective, any more than private practice can be ultimately effective, unless the principles of preventive action in regard to the processes of disease in the individual are recognised and practised.

It is obvious that numerous problems lie in front of the development of the coöperative association of the private practice of a former time with the public medical services of a new epoch. One thing is clearly necessary and even predominant—namely, mutual coördination between all channels and means of medical activity, in order that the integrity and goodwill of the healing art may be maintained, and that the patient, be he rich or poor, may receive the full advantages of the science and art of medicine which have become available since the days of Harvey's demonstration of the circulation of the blood.

BIOLOGICAL TYPES OF DIPHTHERIA BACILLUS

AND THEIR CLINICAL SIGNIFICANCE

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and

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Attention has recently been drawn by Anderson, Happold, McLeod, and Thomson[1] to the occurrence of different biological varieties of the diphtheria bacillus associated with clinical types of the disease which differ in severity and response to antitoxin treatment. They described two main types having apparently distinct and characteristic colony forms when grown on a special tellurite blood medium. They named these *B. diphtheriæ* "mitis" and *B. diphtheriæ* "gravis," associated respectively with mild cases, and severe cases giving a poor response to antitoxin treatment. They also described the occurrence of "intermediate" types. They claimed that all these types are constant and have definite characters. The gravis and mitis types were characterised as follows:—

Gravis.—Colonies after 48 hours' growth on the special tellurite medium were grey or greyish-black and showed a daisy-head form; the bacilli were short, and when grown on Löffler's serum medium their metachromatic granules were either well marked or scanty; non-hæmolytic; fermented glucose, galactose, maltose, but not saccharose; also fermented dextrine, starch, and glycogen, but not d. glucosamine; broth cultures showed pellicle formation with granular deposit and reversion to an alkaline reaction in two days.

Mitis.—Colonies after 48 hours' growth on the tellurite medium were black; the bacilli when grown on Löffler's serum medium presented the morphological features generally regarded as typical of *B. diphtheriæ;* hæmolytic; fermented glucose, galactose, maltose, but not saccharose; also fermented d. glucosamine, but not starch or glycogen; inconstant results with dextrine; broth cultures showed a uniform turbidity and the acid reaction persisted for 4–5 days.

The *Intermediate* types exhibited some characters of mitis and some of gravis.

These findings, if substantiated, are not only of practical importance and significance in the ætiology and treatment of diphtheria, but might be regarded as almost revolutionary in regard to our knowledge of the bacteriology of the disease.

A study of a series of strains of diphtheria bacilli isolated from different cases in Edinburgh has been carried out following closely the methods used by these workers, and the data correlated with the clinical records of the cases.

METHODS

Unselected "positive" cultures on Löffler's medium were taken from those made for the routine examination of diphtheria cases.

Plates of the special "chocolate" tellurite medium as used by Anderson et al.[1] were inoculated from the primary cultures and examined at the end of 24 and 48 hours; colonies of *B. diphtheriæ* were picked off on *Löffler* and agar slopes. The cultures were examined microscopically at the end of 24 hours, and subsequently hæmolytic and fermentation tests were carried out. The growth in broth was observed and the time taken for the original acid reaction to revert to alkaline was determined. Each strain was also tested for virulence.

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[1] Anderson, J. S., Happold, F. C., McLeod, J. W., and Thomson, J. G.: Jour. Path. and Bact., 1931, xxxiv., 667.

Simultaneously, but independently, full clinical records of these cases were kept at the City Hospital, the bacteriological and clinical records being compared at the end of the investigation.

The media used throughout were similar to those described by Anderson et al. The tellurite medium was prepared from Witte's peptone and horse blood instead of rabbit blood. When the strains had been isolated, a batch of this medium was made using rabbit blood and peptone (Parke, Davis and Co.), as in the original formula, and the strains replated on this.

Broth cultures.—The broth used at first was "Lab. Lemco" bouillon with 1 per cent. peptone, phenol red being added as indicator; but good growth at a pH suitable for this indicator (7·2) was not obtained. Hydrocele fluid was therefore added, and the strains all tested in this but at varying times after isolation. An initial increase of the original acid reaction was observed to occur within 24 hours of inoculation.

Fermentation tests.—Hiss's serum water was used with 1 per cent. peptone (Parke, Davis and Co.) and the particular carbohydrate added. Phenol red was used as indicator and the pH was 7·2. Difficulty was encountered with saccharose and starch, several kinds of each being tried. Easily fermentable products of hydrolysis were evidently produced by even a minimum of heat sterilisation, and gave equivocal results. Finally starch (British Drug Houses, A.R.) was used, and both the starch and saccharose media were sterilised by filtration only. The finished starch medium produced a brown-purple reaction with iodine. Dextrine and d. glucosamine were not used.

COLONY TYPES

Cultures kindly supplied by Prof. J. W. McLeod, which had been subcultured for several months on agar, yielded cultures (36–48 hours) on the special medium as follows:—

1. *B. diphtheriæ* mitis.—A fairly large, black, smooth, round, flattened colony, with a somewhat nippled centre, steeply sloping sides, and narrow, flattened, entire grey margin.
2. *B. diphtheriæ* gravis.—A greyish-black, smaller, less smooth, domed colony with domed black centre and wide grey, sloping irregular margin, showing some radial striation. No definite "daisy-head" form was observed, but older colonies tended sometimes to show a sunken ring in the centre.
3. The *intermediate* form produced a much smaller colony, greyish-black with domed centre, somewhat irregular margin and some radial striation.

The medium containing rabbit blood and peptone (Parke, Davis and Co.) tended to produce a less smooth type of colony and to show more markings and radial striations.

Among the series of strains isolated from cases in Edinburgh, colony types were observed which were similar to those of the standard cultures described above: type I. corresponding to gravis, type III. corresponding to mitis, and type II. being intermediate. Very considerable difficulty, however, was found in classifying the colonies, as a great number of varying characteristics was encountered.

BROTH CULTURES

The broth cultures also showed great differences, and a gradation from clear fluid with coarse granular growth and deposit, to uniform turbidity with fine granular deposit, and uniform fine granular turbidity. Pellicle and ring formation was found with examples of each kind of growth.

CELL MORPHOLOGY

The cell morphology in Löffler's serum cultures (24 hours) stained by Neisser's method showed great variations from the "text-book" form (long, thin, slightly curved bacilli with definite bipolar granules) to straighter, thicker, less definitely staining organisms of very varying length. Some almost coccoid forms were met with. In these less typical forms the number of granules was very varied, in some strains appearing only in a few individual organisms. These were usually small, and did not protrude beyond the cell body.

The differences and gradations especially in colony formation and growth in broth require to be stressed to show the difficulty found throughout in classifying the different strains with anything approaching accuracy.

STRAINS ISOLATED

Strains which did not ferment glucose, galactose, and maltose, or which fermented saccharose, were

TABLE I

Case No.	Colony type.	Growth in broth.			H.=Hæmolytic G.=Glycogen fermenter.	Metachromatic granules (Löffler).	Clinical type.
		Pellicle.	Fluid.	Reversion to alkalinity (days).			
1	I.	+	Clear.	7	—	±	Slight.
2	"	+	"	5	—	±	"
3 *a*T.S.	"	+	"	6	—	±	Severe.
*b*N.S.	"	+	"	6	—	+ +	
4	"	+	"	5	H.	±	Slight.
5	"	+	Turbid.	2	—	+ +	Moderate.
6	"	—	"	3	H.G.	±	Slight.
7	"	+	"	2	H.	+ +	Moderate.
8	"	—	Clear.	17	—	+ +	Slight.
9	II.	+	Turbid.	3	H.	±	"
10	"	—	"	6	—	±	Moderate.
11	"	—	Clear.	5	—	±	Slight.
12 *a*T.S.	"	—	"	5	—	±	Carrier.
*b*N.S.	"	—	"	6	—	+ +	
13	"	—	"	6	—	+ +	Slight.
14	"	—	"	5	—	+ +	Moderate.
15	"	—	"	11	H.	+ +	"
16	"	—	Turbid.	6	—	+ +	Severe.
17	"	—	"	5	—	+ +	Moderate.
18	"	—	"	6	H.	+ +	"
19	"	—	Clear.	10	—	+ +	Slight.
20	"	—	"	4	—	+ +	"
21	"	—	"	14	G.	±	"
22	"	—	"	8	—	±	"
23	"	—	"	6	—	±	Moderate.
24	"	—	"	8	—	+ +	"
25 *a*T.S.	"	—	"	6	—	±	"
*b*N.S.*	"	+	"	8	—	+ +	
26	"	+	"	6	—	±	Slight.
27	"	—	Turbid.	7	—	+ +	"
28	"	+	Clear.	15	—	±	Carrier.
29	"	+	"	2	H.	±	Severe.
30	"	+	Turbid.	3	—	±	Severe F.
31	III.	—	Clear.	7	H.	+ +	Moderate.
32	"	—	Turbid.	3	H.	+ +	Carrier.
33	"	—	"	6	H.	+ +	Severe F.
34	"	—	"	3	H.	+ +	" F.
35	"	—	"	2	H.	+ +	" F.
36	"	—	"	3	H.	+ +	Carrier.
37	"	—	"	4	H.	+ +	"
38	"	—	"	3	H.	+ +	"
39	"	—	"	6	H.	+ +	Slight.
40	"	—	"	3	H.	+ +	Moderate.
41	"	—	"	3	H.	+ +	"
42	"	—	"	5	—	±	"
43	"	—	"	3	—	+ +	"
44	"	—	"	3	—	+ +	Slight.
45	"	—	"	3	—	+ +	"
46	"	—	"	3	—	+ +	"
47	"	—	"	2	—	+ +	Carrier.
48	"	+	Clear.	3	—	±	"
49	"	+	"	2	G.	+ +	"
50	"	+	"	3	H.	+ +	Moderate.

T.S. = Throat swab. N.S. = Nasal swab. F. = Fatal. * = Convalescent. Granules ± and + + = few and well-developed respectively.

TABLE II

Colony type.	I. (9 strains).	II. (24 strains).	III. (20 strains).
Hæmolytic	3	4	12
Broth—pellicle	7	7	3
" turbid	3	7	16
" clear	6	15	4
Alkaline in 2–3 days	3	3	15
Well-developed metachromatic granules (Löffler)	4	12	18

(2) *Clinical examination of the infant must be* complete and thorough, in order to exclude examples of secondary hæmorrhage—e.g., sepsis, syphilis, gastro-enteritis—genital crisis of the new-born, and mouth injuries.

(3) The age of the patient must be less than 7 days when bleeding begins. The only possible exception is the rare case of umbilical hæmorrhage beginning when the cord-stump separates.

(4) In slight cases of hæmatemesis or melæna the mother's nipples must be examined for cracks or fissures which may have caused "spurious" neonatal hæmorrhage.

Frequency.—Various *authors state the frequency* as 1 in 600 to 1 in 300 births. In my series I can make the calculation only on the 22 babies born in the Maternity Hospital, and for these the frequency is 1 in 520 births.

Sex.—The sexes are equally affected.

Maternal and obstetrical influence.—I do not find that the age or general health of the mother has any bearing, but it is of some interest to note that 16 out of the 28 babies were either the first or second born. Neither the character of the labour nor the type of anæsthesia given to the mother seems to have any influence; all types of labour, including one birth by Cæsarean section, appear in my series.

Condition of infant.—The babies are generally full-term and of good size; this is somewhat surprising, because one might expect fragile prematures to be more often affected. Usually the baby seems to be in perfect health up to the beginning of bleeding; the average age of the child at onset of hæmorrhage (26 cases) was 37½ hours. In one twin-birth (probably monovular) both babies were affected; in another (binovular) only one baby suffered.

Type of bleeding.—Nearly all were cases of melæna, with or without hæmatemesis. There were three examples of umbilical bleeding and one of vaginal; in two cases epistaxis, or urethral or subcutaneous and submucous hæmorrhage, accompanied melæna.

ÆTIOLOGY

I made reference in my previous paper to some of the theories offered to explain the hæmorrhagic disease, but no final conclusions have yet been reached. It is said that in about 40 per cent. of the cases which come to autopsy diligent search will show a very small gastric or duodenal erosion, or an area of hyperæmia which may have been responsible (see Kennedy,[8] Steiner,[16] Bonar,[2] Ritter v. Reuss,[15] Rhenter,[14] and Kobes [9]). This evidence, however, is inconclusive because, if it were possible to make the necessary examination, a similar change might be found in all new-born babies as a result either of the tying of the umbilical cord or of ascending intestinal bacterial assault. Some support for this possibility is provided by careful chemical testing of the fæces of healthy neonates; this has demonstrated traces of blood in 29 per cent. to 64 per cent. of specimens submitted to examination (Bonar [2]; Högler [7]).

Some workers have assumed a low form of alimentary infection—from blood stream, from umbilicus, or from the contents of the intestine—to be responsible, and the work of Hare and Glynn [6] upon lamb dysentery is of interest in this connexion. Definite examples of gastro-enteritis are seen in new-born babies from time to time, but these present a clinical picture which is quite different from that of hæmorrhagic disease, and up to the present the infective theory must be regarded as inadequate.

Recent work on vitamins has led Moore and Brodie [13] to suggest that a lack of vitamin B in the mother's diet may be responsible, for they claim that this avitaminosis results in deficiency of prothrombin in the baby.

It seems likely that fruitful results may be expected from further investigations of blood characteristics in neonates. A number of contributions have appeared (Grob,[5] Maurizio,[12] Beveridge,[1] Kugelmann and Tritsch,[10] Carr,[4] in addition to those mentioned in my previous paper), but no definite conclusions have been reached. These investigations must be carried out by an expert and it is often very difficult in actual practice to obtain specialist services of this kind at short notice. There seems to be little doubt that the bleeding tendency of most babies, as indicated by the coagulation and bleeding times, is increased during the first ten days of life; but a mere increase of this tendency does not seem sufficient to explain the onset of a disease which occurs only once in every 500 infants born.

TREATMENT

Citrated whole blood, obtained from mother, father, or any other healthy donor, should be injected intramuscularly and subcutaneously as soon as the bleeding is noted. It is most important that treatment should not be delayed. The requisite amount of citrate is easily obtained by dissolving a 2-gr. sodium citrate tablet in 3 c.cm. of water, and using 1 c.cm. of this solution for every 10 c.cm. of whole blood. The injection may be made into the outer aspect of the thigh, and it is wise to introduce the needle below the midpoint of the thigh, in a cephalic direction, in order that the puncture may be outside the napkin area and so out of danger of infection. When it is necessary to repeat injections different masses of muscle should be used—for instance, the deltoid region and the abdominal wall. The volume of blood required varies from case to case: in a severe example 20 c.cm. should be given at once, and doses of 10 c.cm. may be repeated every two hours as necessary. Twenty-seven out of my 28 cases were treated by blood injection, and the average volume given per patient was 29 c.cm. The largest volume received by any one infant was 85 c.cm. On two occasions I have transfused the donor's blood into the baby's superior longitudinal sinus, but the operation is difficult, dangerous, and not to be recommended (see Voron and Banssillon [17]). When the injections are made subcutaneously and intramuscularly preliminary typing of the bloods is not necessary.

It is most difficult to assess the value of blood injection because it is agreed that a number of cases, even serious ones, will recover without any special treatment. The physician may unwittingly persuade himself to the view so commonly held by the laity that when hæmorrhage ceases shortly after the injection of blood there must be an intrinsic relationship between the two incidents. Although no such relationship has yet been proved definitely, there are three clinical facts which lead me to believe that this form of treatment is efficacious:—

(1) The death-rate is now definitely lower than it was before the introduction of blood treatment, though this reduction in mortality is offset to some extent by the fact that the older series probably contained a larger proportion of truly septic cases than are seen nowadays.

(2) In cases of umbilical bleeding, when the site of hæmorrhage is visible, I have seen cessation of bleeding within ten minutes of the injection of blood.

(3) I have been impressed in a number of cases by the general improvement which quickly follows the injection. It is not uncommon to find that the

restless irritable infant becomes peaceful and falls asleep within half an hour.

Although it would seem theoretically advisable in cases of melæna or hæmatemesis to permit rest for the upper part of the alimentary tract by withholding oral fluids, it must be remembered that contractions of the intrinsic musculature are probably increased by hunger, and it is clearly established that strict deprivation of fluids is more dangerous to the baby than feeding on rational lines.

If blood is injected immediately the diagnosis is made, it is not necessary to withhold oral fluids for more than three hours. The infant may then be given a 2-oz. feed of aspirated maternal milk, which should be repeated at two-hourly intervals for 24 hours. During this period the baby is not lifted from its cot, and care is taken that the supply of external heat, by carefully guarded water-bottles, electric lamps, or electric blankets, is adequate but not excessive. When breast-milk is not available a 10 per cent. solution of glucose in water may be used in the same dosage. Subcutaneous or intraperitoneal saline injection may be necessary in severe cases; rectal salines are seldom advisable. It is usually safe to lift the baby gently to the mother's breast about 24 hours after the onset of the illness, but the child should not be moved, even for this, if the local and general signs do not support the view that hæmorrhage has probably ceased.

Drugs given orally to control hæmorrhage are probably valueless. In umbilical bleeding a thorough trial should be given to local measures, such as ligature of the base of the cord and the application of hæmostatic substances (adrenaline. tannic acid, perchloride of iron, silver nitrate); but blood injections should be given in addition. During convalescence gr. 1 of reduced iron or iron and ammonium citrate should be given twice daily. Fresh air, sunlight, and a proper diet are clearly indicated, while carefully regulated doses of ultra-violet radiation may be valuable in some instances. Marmite, one half of a teaspoonful twice daily, has been employed in recent cases.

PROGNOSIS

The chances of recovery depend upon the weight of the baby, the amount of blood lost, the rapidity and adequacy of effective treatment by blood injection, and the presence or absence of infection or sepsis. My own experience during the past 12 years leads me to think that the disease is somewhat less severe than it was. Three deaths occurred in my series of 28 cases, giving a mortality-rate of 10·7 per cent.; my cases were consecutive examples and included a number of premature infants as well as one moribund baby seen in private practice.

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TROPICAL ULCER AS A DEFICIENCY DISEASE

TREATMENT WITH INJECTIONS OF CALCIUM

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Tropical ulcer (syn. tropical phagedænic ulcer) is a well-recognised clinical entity with a somewhat patchy distribution throughout the tropical and semi-tropical belts. The observations here recorded apply only to the Bugwere and Bugishu districts of Uganda, as my knowledge of conditions at first hand is limited to these parts, but I see no reason why the method of treatment here discussed should not be applied with equal success to other communities.

The morbidity-rate from this disease is admittedly enormous; its precise extent is unknown, but may be guessed from the fact that at every hospital and sub-dispensary in the two districts ulcer cases outnumber all other cases together by more than two to one. If left untreated, death ensues in nearly every case. Hospital records do not show a high death-rate from the disease because the patients usually run away after a few months' trial of hospital methods, and out-patients attend only sporadically; inquiries among the chiefs, however, elicit the information that these patients almost invariably die after returning to their villages. Speculation is often inaccurate, but there is good reason to suppose that in its mortality and morbidity tropical ulcer may take its place with malaria, plague, and trypanosomiasis.

ÆTIOLOGY

The disease attacks both sexes equally, especially during adolescence, a fact which should not be lost sight of when we consider it as a metabolic disorder. It has been confused in the past with syphilis and yaws, and it is difficult to decide what part these diseases may play in the ætiology of tropical ulcer among heavily infected communities. Nearly every variety of organism has, at one time or another, been blamed for producing this condition, but in no case has the evidence adduced been convincing.

A useful contribution to the ætiology of tropical ulcer is that of McCulloch,[1] who found in his cases a high figure for blood-sugar and a low one for blood-calcium and urea. His actual words are: "Tropical ulcer is a dietetic ulcer, and the question of causative organisms need not be considered at all." With these views my therapeutic results are in complete agreement.

The fact that spirochætes and fusiform bacilli, for instance, are found constantly in these lesions is of no scientific value ætiologically, for it is the exception for such organisms to be absent from any wound of skin or mucous membrane in tropical countries. Furthermore, I have not yet found, in the literature devoted to this subject, any evidence of more than one of Koch's postulates having been fulfilled. The undoubted fact that tropical ulcer may assume epidemic proportions should not prejudice opinion too strongly in favour of the bacterial theory, without investigation of the general conditions obtaining at the time of such epidemics. For example, the Carrier Corps of natives during the last war, in the years 1914–18, was said to have suffered from an epidemic of tropical phagedænic ulcer. But here we are dealing with a community removed from its natural surroundings and living under conditions of diet and climate widely different from those to which it is accustomed. It would be as rational to insist that scurvy and famine œdema were bacterial diseases, because they frequently assumed epidemic proportions.

A significant fact in the ætiology of tropical ulcer is that it is found almost exclusively among the poorest classes. The well-to-do native is as susceptible to other diseases as the poorest; he is usually infected with malaria, and frequently with syphilis. His mode of living is in many cases identical with that of the poorer native, with the sole exception of diet. Here the difference is startling. The average chief's diet in the Bugwere and Bugishu districts of Uganda, for instance, is as follows:—

Staple food.—Unripe bananas cooked, sweet potatoes. Daily milk.

Supplementary.—Beef twice weekly, chicken twice weekly, rice and eggs occasionally.

Most of the other natives, however, live on the following:—

Staple food.—Unripe bananas cooked, sweet potatoes. Milk only if they possess cattle.

Supplementary.—Beef perhaps once a month, often less.

Native beer is taken by both classes, and consists of various fermented vegetable products.

Hospital records show that tropical ulcer, as distinct from syphilitic and framboesial ulcer lesions, is never met with among chiefs or their families, while it constitutes one of the most frequent diseases among other classes.

A further significant point in the ætiology of this condition is found in the Buganda Province, especially in the neighbourhood of Kampala. Here the Baganda are, in the main, well-to-do, and have a good meat and milk ration in addition to bananas, rice, and sweet potatoes. Nearly all the menial work—e.g., that of porters—is done by immigrants from Ruanda, who receive a small wage and live on a purely vegetable diet without any supplement in the way of meat or milk. Among the ulcer cases seen in that part of the country, the vast majority are the Ruanda labourers, and extremely few are found to be local Baganda.

Taking all these facts into consideration, a dietary cause for tropical ulcer is at least as likely as a bacterial. We have, however, no direct guide to which element of the diet might, by its diminution or absence, be responsible for the disease. According to McCulloch's researches, calcium is constantly deficient in the blood of these patients, while the calcium content of the soil, in Uganda at any rate, is known to be poor. These last two observations are suggestive, but by no means conclusive, in attributing tropical ulcer to a calcium deficiency. As in other deficiency diseases, however, the therapeutic test adds considerable weight to what is, after all, mere speculation.

CLINICAL OBSERVATIONS IN SUPPORT OF A DEFICIENCY THEORY

(1) The onset of a tropical ulcer is usually ascribed to a pre-existing local injury, though in many cases no such injury has been present, and the ulcer in these cases begins as a small papule which in a short time breaks down and discharges a thin offensive fluid. This secretion is a product of tissue necrosis, and bears no resemblance to inflammatory exudates.

(2) According to other observers,[2] there is often a small areola surrounding the papule, but this I have never been able to see on the African skin. At all events, there are no other signs of an inflammatory reaction; pain is usually slight or absent at this stage, there is no increase of heat in the part, and lymphangitis and lymphadenitis are not seen.

(3) Rapid destruction of tissue follows, with a variable amount of pain, dirty slough and discharge, and an advancing edge which shows no evidence of an inflammatory reaction. Pain becomes a marked feature only when tendons, periosteum, or bone are involved. Later, œdema is usually present around the lesion, and later still, evidence of secondary infection may be observed. The whole aspect of the condition, however, is one of tissue necrosis on a large scale rather than of inflammation. The clinical picture of an old-standing case in the foot, for instance, is highly suggestive: the blackened necrosed stumps of the tarsal bones project from a mass of unhealthy granulations, among which may be seen the mummified remains of muscles and tendons. The patient is cachectic and exhausted, while the temperature remains normal or subnormal and general signs of a pyogenic infection are absent.

(4) Treatment locally with antiseptics does not produce any marked improvement. Thorough scraping, with removal of necrosed bone, may bring about slow healing, but as often as not the ulcer slowly regains its former characters and remains indolent until the patient dies of exhaustion or intercurrent disease. As an illustration of the indolent nature of these ulcers I may quote Langeron,[3] who by his local applications (which, incidentally, include calcium), reduced the time of healing of a 16 cm. ulcer from 240 to 91 days! General treatment has also proved disappointing. Salvarsan and other arsenical compounds do not produce rapid amelioration, while antimony, though successful in many cases when used for a long period, is by no means a certain cure. This fact should be given due prominence when considering the spirochætal or protozoal theories of causation of tropical ulcer.

TREATMENT WITH CALCIUM INJECTIONS AND RESULTS

In September, 1931, treatment of tropical ulcer with calcium injections was instituted at Mbale Native Hospital, and later at the seven sub-dispensaries in the Bugwere and Bugishu districts. In all, about 500 patients have so far received this treatment.

Method.—Calcium chloride grs. 15 in 10 c.cm. of distilled water are daily injected intravenously. For children, from 5 to 7 grs. are injected intravenously, according to age. Local treatment consists of eusol dressings twice daily only. The first few injections usually cause almost immediately a disagreeable feeling in the mouth and at the site of the ulcer. This is by no means a disadvantage among native patients, who consider it a sign of the efficacy of the remedy.

Results.—The first and most remarkable result of calcium treatment is the disappearance, in three or four days, of every trace of offensive odour. There have been no exceptions whatsoever to this rule; that this was not due to the eusol dressings is shown by the fact that many patients who had been under various treatments previously, including eusol dressings, without losing this stench, did so as soon as they received calcium injections.

Within the first week of treatment the slough separates, and healthy granulations appear in the base of the wound. Diseased bone separates spontaneously or, if merely patchy on the surface of a long bone, is absorbed. After ten days the ulcer is clean; there are no exceptions to this rule either. Healing of the ulcer begins from the edge, and is rapid in most cases, though a few, while remaining clean, heal very slowly indeed. This is partly due to the difficulty in keeping the patients in bed, and in several cases has been due to their scratching off the new epithelium as soon as it has formed. The general condition of the cases treated with calcium injections improved along with the local healing. Many, especially adolescents, gained weight, and showed a desire to return to an active life before the ulcer had completely healed.

Tabulation of results.—In assessing the results obtained and tabulating them satisfactorily, difficulty is experienced in several ways, a few of which I may mention here.

Ran away.—This is unfortunately a very common entry on the case-sheet when dealing with primitive African tribes. Some run away because they are tired of hospital after spending several months as in-patients; others run away after a few days because routine and diet do not accord with their tastes. These latter comprise all the cases marked "Ran away. No improvement," and had an average stay in hospital of only 1·4 weeks.

The second and larger class of "ran away" comprises those whose ulcers are practically healed, usually with only ¼ inch square of non-epithelialised surface remaining. These I have called *ran away; almost cured*, for statistical purposes, though for practical purposes they could be considered cures. To judge by other patients who had reached a similar stage in the progress of healing and did not run away, another week would have seen a complete cicatrix.

Almost cured.—These are cases similar to the above who, however, have not run away but still have a small area of non-epithelialised surface at the time of writing.

Improved.—In these cases the ulcer is clean and active healing is taking place, usually at the rate of ½ inch a week on the whole of the circumference. Many of these started as ulcers of 9 inches or more in diameter and, though healing well and perfectly clean, take some time to epithelialise completely.

The three patients who died were all old men, in very poor condition. Two succumbed to pneumonia and the third to diarrhœa, possibly due to amyloid disease; permission for a post-mortem examination could not be obtained.

The first 69 cases treated with calcium chloride injections are here discussed (see Table); 35 of them had had in-patient treatment with arsenical and other metallic compounds, as well as local dressings, for a period of up to six months. There was roughly an equal number of either sex. The number of patients treated was 69, the average age 19·2 years, the average previous duration of ulcer 8 months, and the average duration of calcium treatment 4·8 weeks.

—	Number and percentage.	Treatment (weeks).
Cured	15 (21·7)	4·3
Almost cured	8 (11·6)	7·0
Ran away; almost cured ..	13 (18·8)	4·4
Improved	10 (14·5)	6·5
Ran away; improved	12 (17·4)	4·3
Ran away; no improvement ..	5 (7·2)	1·4
No improvement	3 (4·4)	4·0
Died	3 (4·4)	6·1

N.B.—No improvement merely means that no healing has taken place. All the ulcers are clean and free from stench. Of the three cases thus tabulated, one ulcer is based on elephantoid tissue and one is clinically syphilitic, though no improvement took place previously on salvarsan and bismuth treatment.

As these cases did not all begin to receive treatment on the same date, and are admitted almost daily for a course of calcium injections, it is impossible to exclude such items as "almost cured." At whatever date statistics are taken there will always be comparatively recent arrivals who have not yet attained complete healing. It must be remembered that all cases marked "improved" are making steady progress from week to week.

Thus we may group the results in the following way:—

	Per cent.		Per cent.
Cured or almost cured	52·1	No improvement ..	11·6*
Improved	31·9	Died	4·4

* Of these several remained under treatment for less than one week.

The results obtained at the sub-dispensaries, in charge of native dressers, have been equally encouraging. The treatment lends itself to application on a large scale, providing that sufficient dressers experienced in intravenous therapy are available. Apart from the obvious advantages of this treatment, the saving in dressings and other more expensive drugs is sufficient to commend it in hospital work.

CASES

CASE 1.—Man, aged 18. Duration of ulcers, seven months. Previous treatment with antimony and bismuth, two months, without improvement. He had two ulcers, one on the left shin, measuring 3 in. by 2 in., and one on the left foot, which had amputated the middle three toes. Both ulcers were highly offensive and showed no sign of healing. Sept. 17th: treatment with calcium injections started. Sept. 28th: no smell; dry healthy granulations almost covering the base of each ulcer. Oct. 9th: active healing at the whole circumference of each ulcer. Nov. 4th: completely healed; discharged.

CASE 2.—Woman, aged 22. Brought her child to hospital as it was suffering from malaria and marasmus. She was feeding the child at the breast, and both were in a debilitated condition. One week after admission to hospital she developed an ulcer over the right external malleolus. Two days later a course of injections with salvarsan compounds and bismuth was started, and a month later, as there was no improvement, antimony was tried. After five months of treatment the ulcer measured 5 in. in diameter and, in spite of frequent dressings, was extremely offensive and lined with a dirty slough. Oct. 23rd: treatment with calcium injections started. Oct. 30th: all smell and slough disappeared, revealing some periosteal necrosis. Since then healing has taken place very slowly, possibly due to the drain of calcium through lactation. Incidentally the child, which had previously not reacted to treatment with quinine and cod-liver oil, began to improve within a week of its mother receiving calcium injections, and is now in good health.

On Dec. 22nd the mother's ulcer was half its former size, perfectly clean, and healing steadily.

CASE 3.—Boy, aged 15. Previous duration of ulcer nine years. Previously had antimony and bismuth treatment for four months without improvement. He had an ulcer measuring 11 in. by 8 in. on the front and inner side of the right leg, involving the tibia. He had several hæmorrhages from the exposed medulla, and on one occasion was found unconscious in the hospital grounds, having lost several pints of blood. Amputation was being considered, but in view of the successful progress of Case 1—our first case to receive calcium injections—it was decided to give this treatment a trial in his case. Sept. 28th: calcium injections started. Oct. 9th: healing began. Nov. 25th: the whole crater had filled with healthy granulations; epithelialisation was progressing rapidly, and the remaining uncovered portion measured 2 in. by 1 in. On this day he scratched the edges of the wound and infected it badly, so that almost the whole of the new epithelium stripped off. Dec. 22nd: healing has again taken place, and now the remaining unhealed portion is roughly the same as on Nov. 25th.

CONCLUSIONS

1. Tropical ulcer is one of the great causes of death and disability among African natives. 2. There is little evidence in favour of a bacterial cause, whereas its ætiology from the dietary point of view deserves consideration. 3. Treated by daily intravenous injections of calcium chloride, the great majority of patients showed rapid healing. This treatment constitutes a definite advance, in that it is superior to all others both therapeutically and economically. 4. Approximately 500 cases of tropical ulcer have received this treatment, and the first 69 personally observed are analysed.

I am much indebted to Dr. C. R. Wallace, senior medical officer, Mbale, for his enthusiastic help in arranging that

this routine calcium treatment should be carried out on all ulcer cases in the hospitals and sub-dispensaries under his control; for many valuable suggestions, and for his assistance in the production of this paper.

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HYPERTROPHIC PYLORIC STENOSIS IN ADULTS

BY MARK COLEMAN, M.S. LOND., F.R.C.S. ENG.
ASSISTANT IN THE SURGICAL UNIT, UNIVERSITY COLLEGE HOSPITAL

THIS condition has received scant recognition in England. On the continent attention was first directed to its possibility by Landerer in 1879; whilst in England, in 1904, Mayo-Robson and Moynihan described two cases. Since then a few isolated authentic cases have been reported in America, and Walton,[1] in his text-book of "Surgical Dyspepsias," remarks on two cases of his own. The following case possessed a complication not present in those so far described.

CASE RECORD

History.—The patient was a married man, aged 38, a platelayer, and he complained of periodical attacks of abdominal pain for seven years, with vomiting for the last two years. During the earlier years of this period upper abdominal pain came on regularly two to two and a half hours after meals. The periods of freedom from pain were as long as six months, but they had become progressively shorter, and the pain had increased in severity so that his appetite was affected. Eventually the pain became almost continuous; it was a dull gnawing ache, but became more acute within five minutes after a meal and induced belching and vomiting, which to some extent relieved it. Recently he has had typical "hunger pains" relieved by taking food or a bismuth mixture.

There was no history of hæmatemesis or evidence suggestive of melæna. Recollection of any gastro-intestinal disturbance in infancy was hazy and indefinite; 18 months before he had been investigated for supposed duodenal ulcer, and screening had shown suggestive evidence of a chronic ulcer low down on the lesser curvature with a tendency to spasm near the pylorus. It was considered that most of his symptoms were due to alcoholic gastritis, but strict dieting and abstinence from alcohol failed to ameliorate them.

Examination.—The patient was pale and thin and had a normal temperature. His teeth were mostly in good condition, except for slight pyorrhœa in the upper and lower incisors. The chest was long and thin and the epigastric angle narrow. No abdominal tumour was palpable, but there was a point of deep tenderness just to the right of the mid-line, a third of the way up between the umbilicus and the epigastric notch. No scars of previous laparotomy were present. There were no other physical signs. The test for occult blood in the stools was negative, as was also the van den Bergh reaction in the blood. The blood count was within normal limits. A fractional test-meal showed a small quantity of resting juice, absence of free HCl, a low total acidity, and fairly free regurgitation of bile. A barium meal showed a low hypotonic stomach with persistent contracture of the greater curvature near the pylorus. There was no deformity of the duodenal cap or delay in emptying of the stomach. No ulcer niche was seen, but the spasm was thought to be due to a pyloric ulcer.

Operation.—Mr. A. J. Gardham operated on Nov. 27th, 1931, and found a firm elastic mass surrounding the pylorus, ending abruptly on the duodenal side but gradually thinning and extending for some 1½ inches on the stomach side. The peritoneal surface was smooth and free from any evidence of inflammatory or neoplastic disturbances. Two small soft lymph glands were palpable in the subpyloric region. On the anterior surface of the stomach near the lesser curvature and 3 inches from the pylorus the stomach wall was thickened and œdematous, and the peritoneum greyish-white, with punctate hæmorrhagic speckling; the lesser omentum opposite this region was thickened. The stomach was not dilated. Gastrectomy and anterior gastro-jejunostomy (using the Balfour modification of Polya's operation) was performed. The patient made a rapid recovery, and at the time of writing is completely relieved of symptoms.

Specimen.—The resemblance of the pylorus projecting into the duodenum to the cervix uteri projecting into the vagina was marked, but the orifice was circular and patent. The tip of the little finger, when pushed through this opening from the pyloric side, was gripped by what felt like a ring of unyielding tissue; there was no grating on cutting the pylorus. The cut surface showed the tumour at the pyloric ring to be due to a muscular hypertrophy fully half an inch thick, stopping sharply at the duodenum but fading gradually into normal thickness of muscularis on the stomach side. The mucosa showed a moderate degree of chronic gastritis, but was freely mobile over the muscularis in the region of the pylorus. The puckered scars of healed chronic gastric ulcers corresponded in position to the external appearances observed on the stomach. Fig. 1 shows the muscular hypertrophy clearly and the healed ulcers in the top right-hand corner.

Microscopical section (Fig. 2) showed very great hypertrophy of the circular muscle-fibres, stopping sharply at the commencement of the duodenum, as indicated by the presence of Brunner's glands. The same region was also demarcated by the longitudinal fibres of the stomach turning up towards the mucosa, and conceivably acting as a sphincter to the pylorus in this region. There was an increase of interstitial tissue between bundles of muscle-fibres, consisting mainly of compressed fibrous tissue and looser fibres mingled with cells which were endothelial in type; but there was no inflammatory exudate. The mucosa showed the changes of gastritis, and there was considerable lymphoid tissue in the submucosa and diffuse infiltration with chronic inflammatory cells, but no suspicion of malignancy.

COMMENT

Landerer regarded pyloric stenosis in adults without hypertrophy or dilatation of the stomach as a congenital deformity. Maier[2] in 1885 added 21 further cases, most of which came to post-mortem examination on account of non-gastric diseases. The gastric clinical histories, when known, are very sketchily described; but he recorded two young adults who had complained of abdominal pain since early youth, and several others with histories extending over many years. He concluded that there exist pure cases of round or slit-like congenital narrowing of the pylorus. These may be complicated by a congenital muscular hypertrophy or catarrh of the stomach; some are also combined with either a congenital or a very early acquired abnormal fixation of the pylorus, due to an extraordinarily thick *ligamentum hepaticum duodenale* and *gastro-hepatic omentum*.

Mayo-Robson and Moynihan[3] in 1904 described two cases: in the first, a child aged 11 years, who had suffered from infancy with general abdominal disorders and vomiting, laparotomy showed a muscular hypertrophy of the pylorus; in the second, aged 24 years, with five years' duration of symptoms, operation revealed a contracted pylorus without any evidence of organic disease. They considered that these conditions might explain dilatation and catarrh of the stomach in young adults, or the persistent vomiting usually labelled "hysteria" or "pernicious habit."

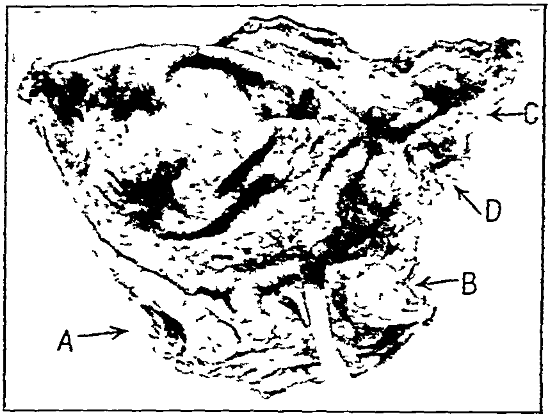
Maylard[4] mentioned 15 cases which showed at operation a dilated stomach without muscular hypertrophy, ulceration, or neoplasm, but a uniformly narrowed pyloric aperture (between 2 and 12 mm. in diameter), just admitting the tip of a finger. The interior of the stomach was inspected by direct vision in all these cases, and gastro-enterostomy completely relieved all symptoms. He thought his cases congenital in origin, but was careful to emphasise that they were in no way akin to hypertrophic pylorus stenosis, although he considered that the latter condition probably existed in adults.

Crohn[5] in 1928 recorded the case of a nurse, aged 45, who suffered all her life with epigastric pain and vomiting. Marked pyloric stenosis with gastric dilatation eventually developed. At operation a mobile pylorus, free from inflammatory changes but resembling an enlarged replica of the condition in infancy, was found. He believes this to be a case of mild congenital hypertrophic stenosis of infancy, not sufficiently severe to interfere with nutrition and managing to survive to adult life.

Mr. Julian Taylor recently told me of a child aged 6 years who was an undoubted case of pyloric stenosis of infancy, treated medically, and who still shows visible stomach peristalsis. Finally, Morton[6] (1930, two cases) and McClure[7] (1931, four cases) described examples in adults varying in age between 31 and 51 years, the duration of symptoms in two cases being throughout life and in the remainder from 12 years to 6 months. At operation all showed a hypertrophied pylorus without apparent organic cause.

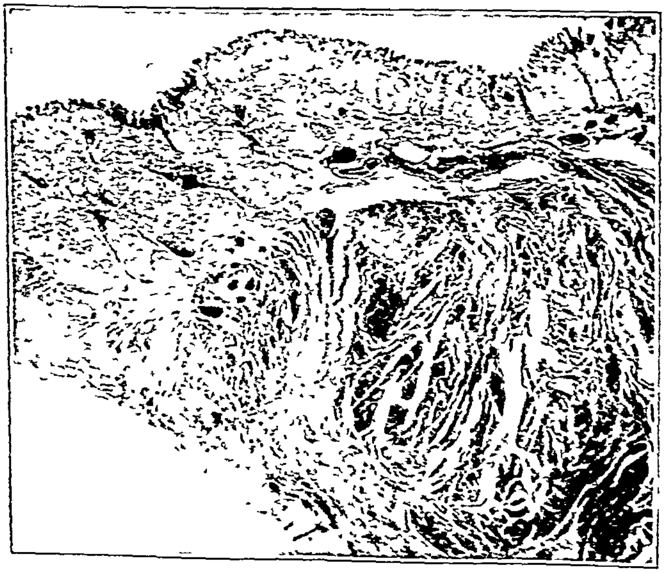
Omitting the cases of Maier and Maylard (of pyloric stenosis without muscular hypertrophy), there appears sufficient evidence to justify the view that the so-called congenital hypertrophy of infantile stenosis may persist throughout life. Probably there are patients with mild unrecognised pyloric hypertrophy in infancy who recover under medical treatment, and the condition may be only discovered at autopsy after death from some other disease. Some, less fortunate, complain of abdominal symptoms throughout life, whilst still others, after many years of freedom from symptoms, may undergo some complicating change that may demand surgical aid. The case now described seems to fall into this last group; in it gastritis and ulceration have apparently added to the pyloric disturbance and increased the symptomatic significance of the anatomical deformity. These factors, acting reflexly on the pylorus, may have been sufficient to upset the balance of the mechanism of the transference of contents between the stomach and duodenum, and so be responsible for the onset of gastric symptoms. It is not proposed here to analyse further the causation of the pain, but merely to indicate sufficient cause for its pyloric origin after many years of latency.

FIG. 1



A and B, cut ends of hypertrophic pylorus. C and D, sites of the ulcer.

FIG. 2



Microscopical section showing hypertrophy of the circular muscle-fibres stopping sharply at commencement of duodenum.

It is interesting to speculate on the similarity of the possible source of origin of symptoms in the congenital and adult cases. In the former, symptoms commence only after a latent period of some ten days or more, thus allowing for the development of gastritis on a deformity already present at birth. So, in the latter, it is suggested that the onset of gastritis was at the root of the commencement of symptoms, only after a latent period of many years. The end-result is not always necessarily pyloric obstruction, as has been stressed by previous writers and is exemplified by the case here described.

The alternative hypothesis is that the muscular hypertrophy is acquired. Chronic gastric ulceration, as in this case, situated well away from the pylorus, can hardly be incriminated for such a degree of hypertrophy; and when juxtapyloric ulceration causes stenosis and gastric dilatation, local muscular hypertrophy is never an observable feature. So far as I am aware no corresponding muscular hypertrophy has been described in other sphincters of the alimentary tract, nor is there any evidence to justify the assumption that chronic spasm may cause muscular hypertrophy. I cannot find any evidence to support Maier's contention of abnormal fixation of the pylorus as a possible ætiological factor.

A clinical review of the recorded cases shows the importance of eliciting a history of gastric disturbance in infancy. Symptoms may commence in early adolescence and middle age, and are those of recurrent indigestion suggestive of chronic ulcer, whilst some may be typical of a dilated stomach. No abdominal tumour could be palpated in any of the cases, but tenderness over the pylorus is common. A barium meal is important, and shows spasticity or a persistent filling defect of the pylorus; but the duodenal cap remains normal and an ulcer niche is never seen in the neighbourhood. There may be gastric delay this routine calcium treatment should be carried out on all ulcer cases in the hospitals and sub-dispensaries under his control; for many valuable suggestions, and for his assistance in the production of this paper.

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those included in these series intravenous treatment was found to be impossible on account of technical difficulties. The veins of small children are not always easy to negotiate, and in severe cases of all ages the veins collapsed very readily, especially as the disease advanced. One patient, a boy of 8, was given intravenous injections with ease on the fourth day of disease; on the fifth, it was quite impossible to get into any vein and on the sixth he died. In many cases, when the needle had entered the vein, the slightest pressure from the syringe caused exudation into the surrounding tissues. Experience in the treatment of malignant diphtheria shows that continued intravenous medication is difficult and frequently impossible. Emphasis must be laid on this point.

TABLE II

—	Total cases.	Fatal cases.				Recovered cases.			
		Total.	Fatality-rate.	Developed paralysis.	Paralysis-rate.	Total.	Recovery-rate.	Developed paralysis.	Paralysis-rate.
G.I.A.	25	17	% 68	5	% 29·4	8	% 32	7	% 87·5
A.T.	11	9	81·9	3	33·3	2	18·18	2	100

G.I.A. = Cases treated with glucose, insulin, and antitoxin.
A.T. = Cases treated with intramuscular and intravenous antitoxin.

Blood-sugar was not estimated as a routine. In 11 of the 25 cases of the glucose-insulin series the fasting blood-sugar was estimated once by the method of Folin and Wu. A reading outside normal limits was never found, even when the sample was taken—as in one case—two hours before death on the fifth day of disease. This does not seem to bear out the finding of other workers that there is usually an initial hyperglycæmia in the malignant cases. Anything in the nature of a routine tolerance test was considered to be out of the question. Veins, if not collapsed, were far too precious to be used for this purpose, and usually the patients were too ill to be upset by more needle insertions than were absolutely necessary. Several attempts were made to use the alternative method of Crecelius and Seifert,[5] but even here there was such difficulty in obtaining enough blood from an ear or finger that the attempt was abandoned.

The results of so small a number of cases as 25 can have no statistical value; one can merely gain impressions from them. The death of a patient from severe toxic diphtheria is often preceded by extreme discomfort and distress. One certainly gets the impression that, after treatment with glucose and insulin, this discomfort and distress (even in patients who succumb rapidly) are relieved. The relief is often so marked that in the short period before death the patient's friends find it difficult to believe that he is dying and not steadily improving. The treatment is perhaps worth while from this point of view alone. There are in diphtheria roughly two danger periods. Patients who succumb during the first period usually die within the first fortnight. Those who pass through the first period may survive or may live one or two months—an average of about six weeks—only to die after the development of multiple paralysis. In a series of 69 fatal cases occurring in 1931, not treated by glucose and insulin, only 18·8 per cent. survived to the second danger period. One is therefore encouraged to investigate further an auxiliary line of treatment by means of which 10 out of 25 apparently hopeless cases, or 40 per cent., survive to the second danger period, and 8, or 32 per cent., recover.

I am indebted to Dr. J. S. Anderson, superintendent of the Leeds City Hospitals, for his advice and for permission to publish these cases.

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Clinical and Laboratory Notes

HÆMOLYTIC ANÆMIA

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(From the Department of Clinical Investigations and Research, Manchester University and Royal Infirmary)

A SINGLE woman, aged 23, a café manageress, was admitted to the Manchester Royal Infirmary on *April 14th, 1931.* She complained of attacks of vomiting and palpitation coming on every few weeks and lasting several days at a time.

In 1928 (three years before admission) she had been employed in a dye works. At this time she was set to work with a new yellow dye (whose constituents we are unable to ascertain), but she very soon developed anæmia and was away from work for six months. When she returned to work she was not completely well but felt "run down" and became easily tired. In 1930 she had an attack of jaundice which lasted for 16 weeks, and on returning to work she was again not completely well but lacked energy and felt "out of sorts." She had felt like this ever since.

In 1931 (some months before admission) she began to have attacks of vomiting. These attacks occurred at intervals of several weeks, and lasted for two or three days at a time; the vomit was bile-stained.

The appetite was poor and the bowels constipated, the stools usually being dark-coloured. Menstruation was regular, but the duration of the period had diminished from ten to three days. There were no urinary symptoms or œdema, but she had dyspnœa and palpitation on slight exertion.

Clinical examination.—The patient was pale and slightly yellow. Tongue, teeth, and fauces showed no abnormality. Systolic and diastolic murmurs were heard all over the præcordium, loudest over the mid-sternum; there was no cardiac enlargement. The lungs and abdomen were normal; the liver and spleen were not palpable. The central nervous system was normal. The Wassermann reaction was negative. Hæmolysis of red cells began in 0·46 per cent. saline, and was complete in 0·28 per cent. saline. The blood count showed:—

Red cells	960,000	Polymorph.	54·75 %
White cells ..	3,000	Lymphocytes ..	42 %
Hæmoglobin ..	20 %	Large mononucl...	3·25 %
Colour-index ..	1·05	Eosinophils	None.
Reticulocytes ..	44 %	Basophils	None.

Punctate basophils numerous; marked anisocytosis and poikilocytosis. Abundant platelets.

Progress.—On admission, on *April 14th*, the pallor and yellow colour suggested pernicious anæmia, although the blood film was not typical of this condition. A fortnight later the blood count was lower and the blood picture did

Except when complicated by gastric ulceration—and this would appear to be quite uncommon—the occult-blood test is negative; little help can be expected from a fractional test-meal.

Gastro-enterostomy or gastrectomy, when there is doubt as to the cause, is rational and successful treatment. In two cases pyloridosis was performed, and a second operation was necessary on account of recurrence of symptoms. Pyloroplasty or Finney's operation must be difficult in the presence of so much thickening and loss of flexibility of the pylorus.

I am indebted to Prof. C. C. Choyce for permission to publish this case and for much help and advice, and also to Mr. Julian Taylor for the record of his case.

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MALIGNANT DIPHTHERIA

TREATMENT WITH GLUCOSE AND INSULIN

BY HESTER E. DE C. WOODCOCK,
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THE death-rate from diphtheria in Leeds has steadily risen from 0·04 per 1000 inhabitants in 1928 to 0·19 in 1931. The number of cases admitted to the *Leeds City Hospital for Infectious Diseases* has increased from 600 in 1928 to 984 in 1931. The type of disease has become much more severe, with a rise in case-mortality from 3·05 per cent. to 8·4 per cent. With increase in severity in type there has been a more than corresponding increase in the dosage of antitoxin, and, as the treatment has been largely in the hands of the same medical staff, the variable factor of personal judgment has to some extent been eliminated. Results of treatment with large doses of antitoxin, even if administered in the early stages of the disease, have often been disappointing.

One patient, for instance, who developed diphtheria in a scarlet fever ward, was given in all 160,000 units of antitoxin. Of these, 120,000 units were given within 12 hours of the first symptom, 100,000 being administered intravenously. Palate paralysis occurred on the fifth day and between the 27th and the 38th days there were four convulsive attacks with loss of consciousness for several hours and dilatation of the heart. The patient, a little girl of 6, eventually recovered after multiple paralysis and was discharged 16 weeks after the onset of the disease.

It was therefore decided to attempt an auxiliary line of treatment by giving intravenous glucose together with intramuscular insulin, as suggested by Schwentker and Noel[1] as a result of their researches into the disorders of carbohydrate metabolism occurring in diphtheria. During the last 18 months 28 cases of diphtheria have been treated by this method. Of these, 3 are not included in the series because they were not extremely severe. The other 25 cases would all have been classified as severe according to Bie's grouping,[2] and death was likely in every case. Many of the patients were extremely toxic, showing either delirium and excitement or drowsiness, amounting at times to unconsciousness. There were six hæmorrhagic cases. The youngest patient was 2 years old, the oldest 32. The average age was 10·8 years. The duration of disease before admission was 1–5 days, with an average of 3·4 days.

The routine treatment was as follows. On admission, 20,000 units of antitoxin were given intramuscularly. Two or three hours later 20–40 c.cm. of a 50 per cent. solution of glucose in distilled water were given intravenously together with 20,000–40,000 *units of antitoxin intravenously and* 10–20 units of insulin intramuscularly. This treatment was followed by daily doses of intravenous or intramuscular antitoxin until the membrane began to clear, or at any rate ceased to spread. The largest total dosage of antitoxin was 120,000 units. In the first few cases a second dose of glucose was only given occasionally, but in all the later cases, following on the results of the Birmingham workers,[3] the glucose has been repeated daily, the largest number of intravenous injections given in any one case being nine. Each was, of course, accompanied by insulin.

Attempts were made to give glucose by mouth (for instance, in the form of sweetened lemon water), but many of the patients rejected it and appeared to have an absolute distaste for anything sweet.

RESULTS

Among the first 14 cases treated, up to the end of 1931, there were only 2 recoveries (14·2 per cent.), but of the next 11 cases 6 survived (54·5 per cent.), giving a recovery-rate among 25 cases of 32 per cent. Age is, of course, an important factor in diphtheria and, as one would expect, the older patients responded better to the glucose treatment than did the younger ones (cf. Table I.). Of the 8 surviving cases, 7, or 87·5 per cent., developed paralysis, usually multiple. In the 1 surviving patient who did not develop paralysis, it is significant that the bacillus was of the *mitis* type.[4] It was possible to type 16 other cases (of which 11 were fatal), but in each of these the organism was of the *gravis* type. Of the 17 fatal cases, 5 only, or 29·4 per cent., lived long enough to develop paralysis; 3 of these had palate paralysis on the sixth, seventh, and eighth days, and died on the 13th, 14th, and 10th days respectively. One patient died on the 49th day and one on the 53rd, both with multiple paralysis. The average day of disease on which death occurred among all glucose-treated cases was the 12th or, if the two long cases above mentioned be set aside, the seventh. The earliest day of disease on which any case proved fatal was the second.

TABLE I

—	Cases.	Age in years.		
		Youngest.	Oldest.	Average.
All fatal cases of diphtheria, 1931	82	2	47	6·8
All glucose-treated cases ..	25	2	32	10·8
Fatal " " " ..	17	2	16	7·6
Recovered " " ..	8	4	32	17·25

During the period under review a small series of severe cases was treated with antitoxin alone, intravenously and intramuscularly. The largest total amount of antitoxin given was 160,000 units, of which 100,000 units were given intravenously. Of these cases the most severe, 11 in number, were comparable in type with those selected for glucose and insulin treatment. Table II. shows a comparison of the results of the two series. In many cases as severe as of purulent fluid in the pouch of Douglas, and numerous small diverticula of the large gut from the cæcum to the sigmoid flexure. The pouches were mainly thin-walled sacs, the gut wall being unthickened except in the descending colon, where some reactionary thickening had occurred. The stomach was adherent to the liver and, on attempting to separate adhesions, pus and black necrotic tissue exuded from a large abscess cavity the size of a fœtal head occupying the lesser sac. The foramen of Winslow was closed by adhesions. The tail of the pancreas was completely destroyed and replaced by dark hæmorrhagic necrotic tissue. The surrounding omentum and mesentery showed fat necrosis. The spleen, left kidney, and splenic flexure formed the left border of the abscess cavity. The splenic vessels were lying free in the pool of pus, but showed no signs of erosion. The splenic flexure showed four diverticula, one of which had perforated. A probe could be passed through the opening into the abscess cavity. The common bile-duct was dilated but patent; the gall-bladder was nearly empty, containing only a few drachms of "white bile."

The sequence of events appears to have been: perforation of diverticulum of splenic flexure into the lesser sac with the formation of an abscess and a final acute hæmorrhagic pancreatitis. Pressure of the abscess upon the common bile-duct had caused the original jaundice. The ante-mortem diagnosis was non-committal during the short time possible for observation and investigation. The character of the pain and jaundice were in favour of a gall-bladder condition: ? inflammatory, ?. neoplastic. The physical signs resembled those of carcinoma ventriculi with secondary deposits in the left chest.

CASE 2.—A married woman, aged 66 years, was admitted on April 15th, 1932, with the following note:—

"Became acutely ill 14 days ago with what was apparently cholecystitis. The attack subsided, but she has acute pain in the left loin which shoots into the perineum. Temp., pulse, and respiration normal. Nausea and constipation noted."

On admission she complained of pain starting from the interscapular region and radiating down the right side to the groin and leg; also of vomiting, at uncertain intervals, a greenish vomitus. She gave a history of jaundice in 1915 preceded by attacks similar to the present one. Constipation was admitted and recently the stools had been pale.

On *examination* her temperature, pulse, and respiration were normal, and her tongue furred and dry. She was an obese woman, and no definite physical signs were obtained beyond tenderness in the right subcostal region. The urine was normal in all respects (it contained no bile-salts or pigment). Her condition remained the same until the night of April 17th, when she had a definite rigor, the temperature rising to 102° F. for a brief period. On the following day the pains were worse. Ill-defined jaundice was noticed, most marked in the sclera. On April 19th she had complete suppression of urine, which persisted in spite of treatment until her death on April 21st. The temperature remained subnormal throughout, apart from the rigor.

Post-mortem examination (*Dr. Rickword Lane*).—An abscess starting in the tail of the pancreas immediately posterior to the splenic flexure of the colon tracked along the inferior surface of the pancreas as far as the neck. The pancreas was involved to the depth of the splenic vessels. The head of the pancreas was inflamed and necrotic in patches. Some fat necrosis was present, but in small areas only. The porta hepatis was cut off by adhesions and was full of greenish pus. A well-marked caudate lobe was covered with thick green pus. The gall-bladder was thickened and contracted and the cystic duct very much enlarged, as was also the common bile-duct, so that a finger could be passed from the gall-bladder to the duodenum with ease. The liver showed the abscess tracking along the portal entry vessels, and large septic infarcts were distributed throughout the organ. Minute embolic abscesses were found in the right lung, both kidneys (which were otherwise normal), and visceral pericardium. There was an inflamed diverticulum in the region of the tail of the pancreas, but the actual track could not be followed.

Other organs showed the usual changes expected at the age of the patient, but were not significant.

The cases are of interest from two points of view: clinically, the syndrome of pain in the right hypochondrium and jaundice was misleading; pathologically, diverticulum is an unusual cause of acute pancreatitis and portal pyæmia. Acute pancreatitis is commonly associated with and is the result of infection in the gall-bladder. Infection of the pancreas as a result of perforation of a diverticulum must be excessively rare. Molesworth [1] describes a case of perforation of diverticulum of the duodenum giving rise to acute pancreatitis, but we have found no record in the literature of this condition arising in perforation of a diverticulum of the splenic flexure, in itself a rare event.

There are several cases on record [2] of suppurative pylephlebitis and portal pyæmia following suppuration of diverticula of the sigmoid colon, but not of the splenic flexure. In two cases only were found systemic metastatic abscesses.[3 4] It is of further interest to note that the splenic vein was not thrombosed in either case, although surrounded by pus.

We are indebted to Dr. Abrahams and Mr. Sydney Boyd for permission to publish these cases, and to Dr. Lane for the post-mortem reports.

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THYROID ADMINISTRATION IN A DIABETIC WITH MILD HYPOTHYROIDISM

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A WOMAN, aged 24, height 57½ in., weight 66 lb., was in 1925 admitted to Aberdeen Royal Infirmary. She suffered from fairly severe diabetes mellitus, and a moderate degree of exophthalmic goitre. In addition to thirst, glycosuria, wasting, and hyperglycæmia, there was exophthalmos, tachycardia, nervousness, and tremor.

A glucose-tolerance test was as follows:—

	Per cent.
Fasting blood-sugar	0·287
40 minutes after 50 g. glucose	0·306
80	0·366
120	0·441
180	0·416

She was treated for the diabetes: no special measures were instituted for the hyperthyroidism. Her diet consisted of seven "line-rations," and she had 10 units of insulin thrice daily. On this régime she remained sugar-free till September, 1926, when it was found necessary to increase her insulin to 13 units thrice daily. This increase rendered her sugar-free, and her weight increased to 98 lb. In May, 1927, the basal metabolic rate was +56 per cent., and the signs of hyperthyroidism had lessened. In August, 1927, she had an attack of diabetic coma, and there was another in August, 1930. After the latter attack she seemed to be balanced with seven line-rations, and 80 units of insulin per day. Her weight was now 112 lb.

She remained fairly well for a time, but in October, 1931, was admitted with still another attack of coma. She was very ill, and it was a considerable time before she came round. After recovery from the coma great difficulty was experienced in adjusting her diet and insulin. On eight line-rations diet she received 35 units of insulin thrice daily, and yet the urine contained a large amount of sugar and acetone On this régime the blood-sugar, two and a half hours after a meal, was 0·420 per cent. At this juncture several points forced themselves on the attention. In a small person eight line-rations ought to have been sufficient to keep her comfortable if the sugar were metabolised. Even if she had no capacity to use sugar 20 units should have been enough. Our patient was having eight line-rations and 108 units of insulin per day, and yet her blood-sugar was 0·462 per cent., with marked glycosuria and ketonuria. The insulin somehow was not functioning.

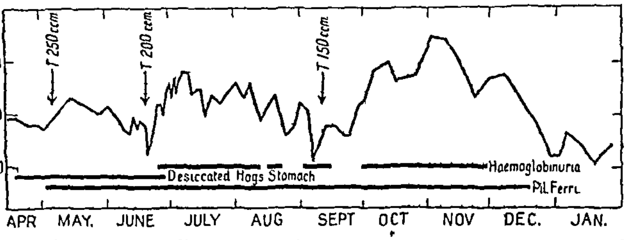
not resemble that seen in pernicious anæmia. The general condition was worse and the yellow colour more pronounced; four days later the patient had a blood transfusion of 250 c.cm. The blood count improved (see graph) and the general condition became better.

During the next six weeks the blood count gradually diminished, and on June 19th a second transfusion of 200 c.cm. was given. Immediately after the transfusion the blood count sank very low, but after four days it rose rapidly to over 1,000,000 (see graph), and at the same time hæmoglobinuria began. Radiography revealed no abnormality of the urinary tract, and cystoscopy showed blood-stained urine coming from each ureter. From the end of June until September the jaundice became gradually deeper and the patient weaker. The blood count fluctuated as shown on the graph, hæmoglobinuria being observed whenever the erythrocytes reached 1,000,000, and ceasing when they sank below 1,000,000. On Sept. 10th another transfusion of 150 c.cm. was given, and a fortnight later the blood count rose suddenly. As it passed 1,000,000 hæmoglobinuria returned.

At this time the skin was pigmented a dark bronze colour, but microscopical examination of a section did not reveal the nature of the pigment, which failed to stain with fuchsin, and gave no reaction for iron. The urine was a deep mahogany colour, and gave a strongly positive benzidine reaction, while the spectroscope showed the presence of oxyhæmoglobin. Microscopical examination showed no red cells in the urine, and tests for bile were negative.

At the beginning of December vomiting began and became increasingly frequent; hæmoglobinuria ceased and the temperature became irregular, fluctuating between 98·4° and 102° F. During the first week in January the jaundice became almost black and the urine deeply bile-stained. The patient, who until now had been very cheerful and intelligent, became mentally dull. At the end of January she sank into a stuporose condition, and the liver and spleen became palpable. On Feb. 3rd she died, and for some hours before, the liver (which had rapidly enlarged to below the umbilicus) pulsated visibly.

Post-mortem examination.—There was no enlargement of the heart, but fatty degeneration and "tabby cat" striation were seen, and the left ventricle was somewhat dilated. There was no other abnormality of the heart or pericardium. The lungs and pleuræ were normal except for an appearance of jaundice on the cut surface of the lungs. The gastric mucosa was a diffuse prussian blue colour, but otherwise normal. The duodenum was finely stippled all over with blue-black granules. The large intestine, peritoneum, and omentum were normal. The liver weighed 1750 g., and was bright brown in colour from gross deposits of hæmosiderin, which gave the prussian blue reaction. The centres of the lobules were pale and yellow. The gall-bladder and pancreas were normal, and the latter showed no pigmentation. The spleen, which weighed 270 g., was enlarged, fairly firm, and of normal colour. The thyroid was pale, and contained much yellowish colloid, which was very sticky and exuded from the cut surface. The kidneys were enlarged; the right weighed 250 g., and the left 220 g.; the cortex was wide and of a deep chocolate colour. The adrenals were rather small but otherwise normal. The genital glands and ducts were normal. The marrow in the shafts of the femurs was bright red, with fine spicules of bone throughout.



Graph showing the red cell count and its relation to treatment. T= blood *transfusion. The horizontal lines indicate the periods of hæmoglobinuria* and the periods during which the patient received desiccated hog's stomach and pil. ferri.

Microscopical examination of organs.—The centres of the lobules of the liver showed very advanced fatty degeneration. The cells in the portal tracts showed hæmosiderin, but not in such quantities as in the kidneys. The Küpffer cells were also filled with hæmosiderin. The endothelial cells throughout the spleen were *loaded with hæmosiderin.* The organ was congested but otherwise normal. The first convoluted tubules and descending limbs of Henle showed pigmentation of their epithelium. The pigment was in coarse brown granules about 2 μ in diameter. The mitochondral zone of the cells consisted of hæmosiderin. The adrenals showed no hæmosiderin. *All* the vesicles of the thyroid were very large and distended with homogeneous colloid. There was gross œdema of the lungs and hyperplasia of the bone-marrow, but the latter contained no hæmosiderin.

Similar cases have been reported in which great benefit was derived from splenectomy. This was considered in the present case, but could not be carried out owing to the poor general condition. Three blood transfusions were given in an attempt to prepare the patient for operation, but on each occasion she developed pyrexia and hæmoglobinuria. The occurrence of hæmoglobinuria is a feature for which we are quite unable to account, and post-mortem examination threw no light upon it.

We wish to thank Prof. A. Ramsbottom, under whose care the patient was, for permission to publish this case; also Prof. S. L. Baker, who placed the post-mortem notes at our disposal.

TWO UNUSUAL CASES OF DIVERTICULOSIS

By Anthony Caplan, M.B. Lond.
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AND
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These cases are put on record as pathological curiosities, with the added interest of the coincidence that they were admitted to hospital at a comparatively short interval.

Case 1.—A married woman, aged 72, was admitted to the Hampstead General Hospital on March 28th, 1932, under the care of Dr. Adolphe Abrahams, complaining of feeling weak. She stated that she had been quite well until five weeks before, when she had experienced fairly acute pain in the right hypochondrium, accompanied by nausea. When seen by a doctor she had been found to be jaundiced, with a temperature of 100° F., and a pulse-rate of 80. The abdomen had been slightly rigid all over; the gall-bladder had been doubtfully palpable. No cyanosis had been noted. Her condition had improved, jaundice and pain disappearing, and after two weeks she had felt able to get up, whereupon the pain and jaundice had recurred. Later the jaundice had disappeared, but pain had persisted in the right hypochondrium, pyrexia also being present. The stools had been rather pale throughout the illness, and she had vomited soon after food during the last few days. She had suffered for three years from flatulence.

On *admission* she was cachectic, but had no obvious jaundice and no cyanosis. Her temperature was 102° F., her pulse-rate 130, and her respiration-rate 20. Her tongue was furred and dry. There were no palpable glands in the neck, and no enlargement of the heart. The sounds were normal. Her blood pressure was 132/80. The percussion note was dull at both bases and the air entry poor, especially at the left base. The breath sounds were vesicular. Crepitations were heard at both bases. The abdomen was *somewhat* distended generally. The upper part was rigid, and an indefinite mass was felt in the epigastrium. There was no evidence of free fluid. The urine was *acid* and had a specific gravity of 1020. It contained no albumin, sugar, or bile. A few hours after admission the patient had a rigor, collapsed *and died.*

Post-mortem examination (Dr. C. Rickword Lane).—Apart from a little clear fluid in the left pleural cavity and generalised fatty changes in the viscera, the only pathological findings were in the abdomen. There was a small collection

DISCUSSION

Sir **Charles Gordon-Watson** agreed about the importance of preliminary colostomy, and also supported Dr. Coffey's method of quarantine drainage. The abdomino-perineal one-stage operation was not, he thought, an essential one for radical excision, and he believed that it was not called for in early cases, especially where the growth was below the peritoneal reflexion; also, it was a dangerous operation, except in the hands of the most expert. For growths at the recto-sigmoidal junction some form of two-stage abdominal operation was safer and wiser; and where the growth was high he considered it was neither necessary nor desirable to remove the rectal ampulla.

Mr. **Ernest Miles** said that Dr. Coffey's mortality figure of 6·25 per cent. for the two-stage operation was extraordinarily good. And he thought the method now described could scarcely be excelled. He personally had always lacked the courage to do a two-stage operation, for two reasons. The first was that the perineal portion of the operation took such a short time, provided the abdominal portion of the operation had been done, and he therefore hesitated to subject the patient to a second anæsthesia and operation to complete the removal. His other reason was that he had hesitated to lock up in the lower abdomen a portion of tissue which had been devascularised and which was thus liable to septic necrosis, for all rectal carcinomata were very septic. In his first series of abdomino-perineal cases the mortality was 33 per cent., but that had now been reduced to 7·6 per cent., and the reduction had been brought about by methods other than making it a two-stage operation—i.e., by a change in the anæsthetic and in a number of small details. In his early cases the anæsthetic used was open ether, and this resulted in a distinct lowering of the blood pressure, so that a number of his patients succumbed to the shock of the operation. The substitution of gas-and-oxygen and spinal anæsthesia with intrathecal stovaine at once reduced his mortality to 17 per cent. though the anæsthesia did not last longer than 45 minutes. He now used a caudal block with 2 per cent. novocain extrathecally, and this gave complete anæsthesia of the perineum for two or three hours. As a result of that, the mortality was reduced to 9·8 per cent.; and since he had made use of blood transfusion it had been 7·6 per cent. He was now using percaine, which gave anæsthesia for five or six hours.

No form of operation for cancer was of avail unless it could show a low recurrence-rate. Cancer of the tongue showed such a high recurrence-rate that surgical removal had now been abandoned for radium and diathermy. The most malignant cancers of the rectal region were the colloidal and melanotic, and it was likely in these that before operation could be done the disease had already spread beyond the confines of even the biggest operation. The papilliferous and adenocarcinoma showed a good freedom from recurrence. He agreed as to the great value of Dukes's classification, but no one could determine clinically that a case belonged to A, B, or C category.

Mr. **J. P. Lockhart-Mummery** said that the need was for an operation which would cure the largest number of cases with the least risk, and the one which did that best was the perineal operation, carried out in two stages. The difficulty was that it could not be done in cases of high growth. As the second stage which had been discussed did not occupy more than five minutes, he did not see the necessity of a second operation. In earlier days two-thirds of the cases were lost from sepsis, and surgeons in the last 20 years had been concentrating upon getting rid of this source of danger. He did not say sepsis was not now met with, but aseptic results were now being obtained in these cases. He liked to get the pelvis to heal up without drainage. Surely the mortality now reached in these operations should be considered to be low, bearing in mind that the patients' ages ranged from 55 to 70 years, when resistance was notoriously much lower than in life's full tide. The great need was to get cases of cancer of the rectum at an earlier stage than at present; this was apparently the only hope of reducing the mortality still further.

Mr. **W. Turner Warwick** spoke as one who for some time had used and advocated the Coffey two-stage operation. Using the perineal excision for low rectal and anal growths, and the two-stage operation for high growths, he maintained that the surgeon with an average amount of experience could deal satisfactorily with all operable cases of rectal cancer. He had operated upon 12 patients by the Coffey method without a death. For his own purposes he had made modifications in the procedure, one of which was to drain the subperitoneal space through a stab wound at the side of the coccyx, and another was always to cut the external sphincter, for that increased the comfort of the patient. One of the greatest advantages of the Coffey operation was that it enabled the pelvic diaphragm to be retained, and the patient was left a whole man.

Mr. **W. B. Gabriel** considered the Coffey operation particularly valuable for ampullary cancer. In the recto-sigmoid cancers there was the difficulty in invaginating the rectum where the fat must be trimmed off the bowel.

Dr. **Coffey**, in reply, said the advocates of the various operations were not really far apart from each other. Until he evolved the operation he had been describing he practised colostomy plus perineal resection. Resecting the growth of the rectum and preserving the sphincter could be done by an operator with the necessary judgment, but almost all the noted surgeons who had done that had subsequently abandoned it. There was a place and a kind of case for all the operations, and in choosing one of them the economic circumstances of the patient could not be altogether left out of account.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

At a meeting of this society, held on Oct. 13th at 11, Chandos-street, London, W., with the President, Prof. **W. Langdon Brown**, in the chair, Dr. **Leonard Seif**, of Munich, read a paper entitled

The Individual and the Community

Dr. Seif said that the relation of the individual to the community is the central problem of individual psychology. Every science has an object. In individual psychology man is regarded as a human or fellow being. It inquires whether the expressions of any one person are those of a fellow man or of a counter man. Reality, as the framework of life, is closely connected with each of the aspects into which the task of life may be divided—namely, society, work, and sex. After discussing these questions, Dr. Seif passed on to consider the part played by the

In searching for cause or causes of this absence of insulin action, it was ascertained that her basal metabolic rate was now −7 per cent., whereas previously it had been above normal. Hyperthyroidism had gone, but there were no clinical signs of myxœdema. The increased weight was attributed to the diabetic treatment. My chief, Dr. Thomas Fraser, put her on thyroid (whole gland) gr. 1 per diem, and there was a dramatic change. Daily she suffered hypoglycæmic attacks. The blood-sugar, two and a half hours after a meal, was now 0·081 per cent. After an interval, during which the diet and insulin were adjusted, it was found that now, with this daily 1 g. of thyroid, she was sugar- and acetone-free on a nine line-ration diet, with 45 units of insulin per day.

During the last six months her condition has remained excellent on this treatment. She looks the picture of health. She goes about a lot and enjoys life. The urine throughout has always contained some sugar, but there has been no ketonuria.

These are the facts of the case. In a diabetic with slight hypothyroidism, insulin became inactive and without effect; when thyroid was given insulin activity manifested itself. In this case, it is considered, insulin activity was conditioned by the thyroid, because other factors in the case were not altered. The patient required increasingly large doses of insulin to maintain the desired therapeutic effects. This tolerance was markedly lessened by the presentation of a small dose of thyroid. The findings would lead one to suspect that insulin is not the only hormone necessary for the normal metabolism of sugar and fats—that insulin does not in all cases solve the whole problem in diabetes.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF SURGERY, SUBSECTION OF PROCTOLOGY

AT a meeting of this subsection on Oct. 17th, with Mr. W. S. PERRIN, the President, in the chair, a discussion on the

Treatment of Cancer of the Rectum

was opened by Dr. R. C. COFFEY, of Portland, Oregon. In former days, he said, cancer of the rectum was placed on the borderline in regard to operability; but now it was conceded that of all parts of the body this region was the one which could best be devascularised and freed from cancer-ridden tissues. Nowhere was early operation more certain to bring about a cure, and in this respect cancer of the rectum was certainly more favourable than cancer of the breast. Most of the blood-supply to the rectum and sigmoid colon, and to the connective tissue and fat in the hollow of the pelvis came via the superior hæmorrhoidal artery, and most of the return was through the corresponding veins, accompanied by lymphatics, which constituted almost the sole avenue of spread of the disease upward. These vessels could be secured by a single ligature above the sigmoid, thus removing the danger of upward metastasis during the operation. Ernest Miles preferred the one-stage operation, but others, perhaps equally skilled, would get better results with the two-stage. Until there was new and contradictory knowledge of the nature and mode of spread of cancer, no vital change was possible in the one-stage operation of Miles, provided a one-stage was chosen.

Three types of two-stage operation had been devised in America: (1) the Mayo operation, which was used in this country at the same time by Lockhart-Mummery; (2) the Jones operation; and (3) the operation practised by the speaker. In the first part of his operation Dr. Coffey ligatured both internal iliac arteries, the sigmoid was severed, and colostomy was performed. The superior hæmorrhoidal artery was ligated at the promontory, and removal of glands and fat rendered the operation a very complete one; the fat was separated down to the tip of the coccyx, and not more than a couple of ounces of blood need be lost in the whole operation. When all the vessels had been dealt with, the intestine was severed through the clamps. At the lower end an aperture was left for the drainage, which he and his colleagues regarded as absolutely essential. The drainage of the retroperitoneal area or the connective tissue area involved a principle which did not apply to many parts of the body. The retroperitoneal or broad ligament area consisted of a mesh-like substance, which held fluids by capillary attraction, and the only successful drainage of that was capillary drainage; 12 to 36 small wicks were used to suck up the fluid in this area, and these were very effective. This drainage continued while granulation tissue was forming at the bottom of the wound, and the drains were left in situ for about a week.

The second stage of the operation, a week later, did not occupy more than five minutes, because there were no vessels to be dealt with. To leave the coccyx behind was to render the operation unsuccessful, and where it had been left, it was necessary to return and remove it; for here one had to deal with a large bony cavity which was non-collapsible in at least half its circumference, and so must heal by granulation.

In Dr. Coffey's experience recto-sigmoid cancer had a mortality of 23·6 per cent., as against the 6·5 per cent. in all the work he and his colleagues had been doing in the last 15 years by the inversion method. That difference was not due to the situation of the cancer; it was because in the case of the higher growths one was dealing with intestinal obstruction and the accompanying toxæmia. In those cases obstruction was usually the first symptom, and a large proportion of the patients would die of simple colostomy. Cæcostomy was also necessary.

Some surgeons advocated a "local" operation. This might be all right in the hands of the expert, but it was bad teaching, since many surgeons must lack the correct judgment as to what was best in a given case. In 1928 Dr. Coffey had had 152 cases; 24 were not operated upon, 49 were explored, and removal was carried out in 79. Statistics should never be taken as an absolute guide, for much depended on the manner in which they were compiled; at one stage of his work he had a low average mortality over a considerable number of cases, and then lost two out of three. Of 209 cases on which he had operated until 18 months ago, 47·8 per cent. were operable.

Dr. Coffey said he was now gradually coming to the three-stage operation, though he regarded Mr. Miles's dicta as gospel. In an advanced case one should first do colostomy and cæcostomy; the cæcum could be held up and the gas should be withdrawn with a trocar, enlarging the opening and inserting a mushroom catheter by Hendon's method; then sutures were put across it so that it could not be pulled out. Afterwards this was pulled up and the end was cut off. After doing colostomy and cæcostomy, the case could be dealt with as if it were one of cancer of the rectum alone.

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THIS book is both a work of reference upon recent advances in applied physiology and biochemistry, and a practical manual of pre- and post-operative treatment. Dr. Cutting possesses the qualifications essential to the writer of a good medical book: a wide and accurate knowledge of scientific literature, sound critical common sense, and a scholarly and lucid style. All recent investigations of real importance are discussed and explained in this volume, and in every case an attempt is made to assess the value of methods of treatment, while the author is careful to recommend no procedure which does not rest upon a sound basis, and which has not been adequately

absolute helplessness of the infant in developing the inborn tendency to overcome its "burning sense of inferiority." As growth and accomplishment reduce the gulf between the child and its surroundings, so do personal and egotistic interests tend to decrease; in this way some harmony between personal and social interests is made possible. He touched upon the factors which influence this development, and the rôle of the mother in promoting an atmosphere favourable to the production of courage and self-confidence.

The two words, courage and the community, he said, are characteristic of individual psychology. Courage is especially important, for without it true community feeling is not possible. As a viewpoint for distinguishing between different individuals, courage is better than intelligence, æsthetics, or morals. The intelligence of the courageous individual is quite different from that of the anxious or frightened person who tends to ask "What do people think of me?" "Do I like people?" and so on. This egotistic standpoint is especially apt to occur where an organ inferiority is present, or where the parents have misunderstood the child and have treated him wrongly. Both spoiling and snubbing foster excessive self-feeling. In the one case the children want what they feel to be their right, in the other they want what they have never had.

Dr. Seif indicated the ways in which confidence furthers a healthy relationship between the individual and the community, whereas a sense of deficiency is associated with the occurrence of neurotic, psychotic, or criminal tendencies. He regarded it as the aim of individual psychology to increase the courage and confidence of those with whom it deals, and so to create a more liveable world.

DISCUSSION

Dr. **T. Lawson** said that Dr. Seif had spoken of the distance of the child from its environment and the duty of the parents to teach the child its social relationship, and asked whether the community feeling was latent or had to be taught.

Dr. **F. G. Crookshank** spoke of the significance of the inferiority feeling upon which Dr. Seif had laid stress. He illustrated the interdependence of the individual and the community by an asylum story, in which the attendant, at the end of an observation which he had made as to the possible recovery of one of the patients, remarked "You may take it from me, Sir, a lunatic never has no friends."

Dr. **O. H. Woodcock** was interested in the way in which Dr. Seif had dealt with the rising generation, and with its need to learn to meet the world. He spoke of the value of the community feeling as taught by individual psychology, and suggested that the secret for the salvation of civilisation might be found here.

Dr. **James Young** agreed with the emphasis laid on the importance of the attitude of the individual to life. He observed that Dr. Seif had shown the philosophic or humane background of individual psychology.

Prof. **Langdon Brown** asked whether a neurotic could be a lady or a gentleman, since he was always trying to take more out of the common stock than he put in. He spoke of the responsibility of parenthood in giving some sense of security. The removal of the sense of insecurity found in so many patients was more important than growing cultures from their excretions.

Dr. **Seif**, in reply, said that social feeling was inborn. In the course of his treatment the individual learnt to become what he really was, but had not had the chance to develop. The neurotic wished to give the appearance of coöperation. Sugar was more nourishing than saccharine, but the latter was many times sweeter. Individual psychology was one of the best foundations for a sound sociology. True love was associated with self-reliance and coöperation.

HUNTERIAN SOCIETY

On Oct. 17th, at the first meeting of the session, Dr. **Nathan Raw** delivered a presidential address entitled

Human and Bovine Tuberculosis

About 8 per cent. of samples of milk delivered into the large towns in England contained living tubercle bacilli, he said, while the deaths from tuberculosis in children up to 10 years of age were estimated at about 3000 per annum in Great Britain. This, however, did not represent the enormous amount of permanent crippling and deformity in those who had survived an attack. The eradication of tuberculosis from dairy cows was undoubtedly one of the most serious problems of the day, and the only real solution was to prevent the infection of calves. As early as 1906 Dr. Raw came to the conclusion that good results could not be obtained by the use of virulent cultures; accordingly, he secured pure cultures of the three strains of the tubercle bacilli and commenced the attempt to attenuate these by repeated subculture. Until the eighty-fourth generation of the culture no change in the virulence was noticeable. After that time, however, attenuation became marked, and the result of a long series of experiments had been the conclusion: (1) that it is possible to render the tubercle bacillus non-pathogenic; (2) that a vaccine prepared from this avirulent organism has enhanced immunising properties and can be used with perfect safety in large doses. The method adopted was the injection of cultures of human bacilli grown in the laboratory for 23 years, which were non-pathogenic and avirulent. So far, between 6000 and 7000 calves, chiefly of pedigree stock, had been immunised. The vaccine was injected when the calf was a week old, and again at the end of two weeks; and very satisfactory results had been obtained. He also used 23-year cultures in the treatment of human tuberculosis, again with very satisfactory results. They caused no reactions, no increase of pulse-rate, and no general disturbance.

Dr. Raw then discussed the question of mutation. Is it possible, he asked, that the bovine bacillus when introduced into the human body in children may lie dormant in the tissues for many years, and becoming adapted to its new environment, may assume the characteristics of a human bacillus, and thus set up human tuberculosis? It was certainly very difficult to explain why the bovine bacillus should almost invariably attack children, and why the human bacillus should so frequently attack the lungs between the ages of 18 and 25. These were questions of immense importance, and he put forward a few problems which awaited solution. Thus: (1) What is the life history of the T.B. before it enters living tissues? (2) Has it undergone a previous mutation? (3) Is infection of the lungs respiratory or alimentary? (4) Does direct respiratory infection from person to person occur? (5) Why do bovine infections in the human occur in childhood chiefly? (6) Why does

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Telegrams: BISMUTH, LONDON. Telephone: BATTERSEA 1813 (6 lines) tested. In a few places he is content to place the evidence for and against some method before the reader, and to allow him to draw his own conclusions. The standard is good throughout and it is difficult to pick any part for special commendation; but the chapter upon blood transfusion may be mentioned as a practical treatise upon all aspects of the question, and that upon disturbances of acid-base equilibrium as a clear exposition of a subject that is apt to puzzle the reader whose laboratory days are far behind him. This book is a valuable addition to medical literature, and specially useful to the candidate for the Primary or Final Fellowship examinations. The print is excellent; the illustrations clear and well-chosen.

Electrotherapy and the Elements of Light Therapy

By RICHARD KOVÁCS, M.D., Clinical Professor and Director of Physical Therapy, Polyclinic Medical School and Hospital, New York. London: Henry Kimpton. 1932. Pp. 528. 30*s*.

THIS book will be read with interest by those who practise medical electrology and actinotherapy in this country. Doctors who wish only to learn the character and therapeutic properties of the different currents and rays for the purpose of prescribing treatment may find it too detailed, but specialists will appreciate an account of the experience and methods of American workers.

The introductory account of electrophysics is illustrated by helpful diagrams; Fig. 42, which shows the different electrical symbols, is especially instructive. The various currents, and the methods of utilising them, are well described. More space is devoted to the galvanic and faradic currents than in most American books on electrotherapy; on the other hand static electrical treatment, which is much more frequently administered in the United States than treatment by faradic and galvanic currents, receives relatively brief attention. The electrical reactions of muscle and nerves and the methods of testing them by the faradic and galvanic currents are fully discussed, and some notes are given of the uses of condensers for the same purpose. The determination of the chronaxie is briefly explained. Hydro-electrical baths do not receive much attention. The author points out the danger of supplying them with direct current from the main, and says that they must be insulated and that metal fittings and taps within reach of the patient should be avoided as much as possible. This is a scarcely adequate precaution. They should be absolutely out of reach. It is questionable, too, whether treatment by the galvanic current in a full-length bath has much therapeutic value; the quick sinusoidal current, on the other hand, in a full-length bath is really useful. A concise account of the uses respectively of infra-red, visible, and ultra-violet rays in treatment is supplied. The diseases which may advantageously be treated by electrical methods are considered in separate chapters under the headings of the different bodily systems. A chapter on electrotherapy in dermatology is contributed by Dr. J. J. Eller, and one on the treatment of diseases of the ear, nose, and throat by Dr. W. Morrison. A useful chapter on physical therapy in institutional practice concludes the book, which contains a glossary of electrical terms and a good index. Dr. Kovács insists on the importance of correct diagnosis and knowledge of pathology before physical treatment is given. Of diathermy he says that it "should not be used as a panacea for all sorts of undiagnosed painful conditions. A complete diagnosis, a definite conception of the underlying pathology to be influenced, and consideration of the individual equation in each patient are essential for its successful application." The book is well prepared, and the illustrations are clear and helpful.

A Descriptive Atlas of Radiographs

An Aid to Modern Clinical Methods. Second edition, revised and enlarged. By A. P. BERTWISTLE, M.B., Ch.B., F.R.C.S. Edin. London: Henry Kimpton. 1932. Pp. 552. With 767 illustrations. 42*s*.

THIS clear pictorial review of the scope of diagnostic radiology has now reached a second edition. The radiograms as before are well chosen and representative. Each is adequately described and most of them are accompanied by line drawing reductions as a guide to interpretation. Many are in silhouette, a technique that the author has devised for showing the fleshy outline; the print is blackened outside the margins of the flesh that, in the ordinary print, are either not seen or are only faintly visible. The scheme of the work is systematic, and the balance between the numbers of illustrations devoted to the various systems of the body in this edition seems to be well preserved. It is not clear why small sections should be labelled "nasal system" and "thyroid system." The illustrations are admirably reproduced.

La syringobulbie

By N. JONESCO-SISESTI. With a preface by Prof. GEORGES GUILLAIN. Paris: Masson et Cie. 1932. Pp. 391. Fr.70.

THIS monograph by Dr. Jonesco-Sisesti is based on the clinico-pathological study of a series of eleven cases personally observed. These cases in themselves represent a noteworthy contribution to the literature and are utilised for the study of several physiological problems connected with the functions of the medulla. Among the more interesting of the conclusions that emerge from this fine piece of work may be mentioned the occurrence of syringobulbia with sudden onset and the peculiar diagnostic difficulties such cases offer; and, in particular, the striking disproportion in some instances between the paucity of the symptoms and the severity of the bulbar lesions. To this point attention is also directed by Prof. Guillain in his foreword; he assures the reader that the researches of Dr. Jonesco-Sisesti prove that the medulla is by no means so "fragile" functionally as is commonly imagined, and that grave alterations of presumed "vital" sympathetic centres can coexist with maintenance of life. The volume also contains excerpts from a rich literature which with the personal cases serve as a basis for the discussion of various aspects of bulbar function and of special symptoms; among these are nystagmus, diplopia (it is curious to find authentic diplopia mentioned several times in connexion with bulbopontine lesions), ageusia, hiccup, the Argyll Robertson pupil. Pathologically, cavity formation, commonly latero-dorsal but sometimes mesial, is so constantly associated with glial proliferation as to make it impossible to separate rigidly syringobulbia from gliosis, gliomatosis, or glioma with cystic degeneration. No such complete review of syringobulbia and its particular features has hitherto been available.

THE LANCET

LONDON: SATURDAY, OCTOBER 22, 1932

THE POLICY OF SCHOOL-CLOSURE

THE recent disbanding of Stowe School "for safety's sake" on the appearance of two cases of poliomyelitis again forces us to question the wisdom of the policy of "school-closure" as a preventive measure. Most authorities believe that poliomyelitis is mainly spread by carriers, or unrecognised infections with the virus; also that carriers generally outnumber cases by more than a hundred to one. Children of pre-school age are more susceptible to, and suffer more severely from, infantile paralysis than do boys of public school age. On these grounds it seems scarcely fair to call the distribution of 500 potential carriers of the virus of poliomyelitis far and wide among the pre-school age-group a safety measure—at least for the community at large. Moreover, the closure of a school a fortnight after the appearance of the first case, as happened at Stowe, makes it as certain as we can be of anything in medicine, that many boys must have had time to become infected as virus carriers under the close living conditions of a school. It may be admitted that, for the inhabitants of a school itself, the risk of infection is diminished by school-closure. It can therefore be argued that since school authorities are in duty bound to do their best for the boys under their care, school-closure is their proper action when a serious disease appears among the individuals for whom they are immediately responsible. What happens to the other 40 million odd inhabitants of this island is not the business or responsibility of any school authority, but of the Ministry of Health. But one could imagine the outcry if, on the appearance of small-pox in an institution, the inhabitants were dispersed far and wide, without vaccination or quarantine of contacts. Yet in small-pox we can detect and trace all infected subjects, while in poliomyelitis only a small minority of those infected are discoverable, and what new chains of infection may be initiated by the distribution of unrecognised carriers from a single infected locality to many other districts, we have no means of guessing. In the case of diphtheria we do know that, when carriers from an infected institution have inadvertently been sent home, severe attacks of diphtheria have sometimes been reported among their young brothers or sisters.

The public health problem involved in school closure may be shortly stated thus. Will the number or severity of symptomatic poliomyelitis infections in the country as a whole be increased by distributing the virus carriers of a single infected institution all over the country, to homes where they are likely to meet specially susceptible subjects; or would keeping an infected sub-group isolated, under conditions which are known to favour the spread of the disease, in the end lead to a greater incidence of infantile paralysis in the community as a whole than would be caused by the dispersion of the infected sub-group? Unfortunately there is no certain answer to this question, but it would be more rational, from the little that is known, to confine an infection to one locality, than to risk spreading it to many. On the other hand, nowadays families of public-school boys are small, and perhaps most of Stowe's infected boys will return to homes in which there are no susceptible infants. Moreover, there is no doubt that those virus carriers who have young brothers or sisters are more likely to infect them as carriers than as cases of infantile paralysis.

With a little luck, therefore, it is quite likely that no cases of poliomyelitis may be traceable to the Stowe experiment. But we earnestly hope that Stowe, having made this experiment, will see it through—that the school authorities will try to get a census of the households to which their boys have returned, and a record of all febrile conditions likely to have been poliomyelitis that may possibly arise in these households during the next two or three months. Such data are sadly lacking, and it is only by immediately seizing such opportunities as the present one at Stowe that health authorities can obtain evidence which may enable them to say under what conditions, and for what infections, school-closure is of danger or benefit to the public's health.

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THE ÆTIOLOGY OF HODGKIN'S DISEASE

THE results of a concerted attack on an old and much-discussed problem—the ætiology of Hodgkin's disease—by a group of workers at St. Bartholomew's Hospital, are now available in a sumptuous volume just published under the title Rose Research on Lymphadenoma.[1] The inquiry was made possible by an endowment over a period of ten years, provided by Mrs. T. E. Rose in memory of a daughter who fell a victim to this disease. The endowment period came to an end in January, 1930, but fortunately since that date the investigation in its more purely experimental aspects has been continued by Dr. M. H. Gordon, working on behalf of the Medical Research Council. From 1920 to 1926, Dr. C. C. Twort, as the first Rose Research Fellow, carried out various investigations under the Fund which have been published elsewhere. In a brief summary of his work, which appeared in 1930,[2] Dr. Twort admitted that no new light on the ætiology of Hodgkin's disease had emerged, and that he had failed to confirm the observations of previous workers who had claimed to identify certain animal and vegetable parasites as causal agents. He did, however, draw attention to one observation he had made—viz., the occurrence of a local transitory

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[1] Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1932. Pp. 136.

[2] Jour. Path. and Bact., 1930, xxxiii., 539.

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the dawn of history, and at the same time how hopelessly hampered it had been by the acceptation of theories that were natural, as they had their origin in physiological ignorance. But the classical teaching, coming down through Hippocrates and Galen, was never challenged, and that is an amazing fact, for the power of prestige has never been more forcibly illustrated. Much fine anatomical research and sound clinical observation was constantly forthcoming, but they never stimulated revolt from the accepted learning; all additions were fitted into fallacious premises, while theories degenerated into fancies as new discoveries required explanation on the old basis. This was the position of medical knowledge in which HARVEY found himself in the seventeenth century, heavily handicapped by ancient tradition, restricted by current knowledge, and unable, for lack of data, to explain the ultimate intention of the design which he revealed. "Nor," says the Orator, "could he complete his work, any more than any other explorer, for it was not a summary of existing knowledge from previous records, but an experimental stage in the development of a high argument." And that is why HARVEY's work always supplies a living text for comment and a living lesson for our instruction. His discovery was a step in an argument, which we to-day are following up. When the great discovery was made the mysteries of disease began to disappear at a geometrical rate of progression, and the story of progress is soundly grouped by Sir GEORGE NEWMAN under three headings: first, the recognition of a constant and stable internal environment for the regulation of health: secondly, the discovery of the cause and the methods of control in many infective diseases; and, thirdly, the establishment of the doctrines of immunity, with their promises of prevention, and their great performances. These are the steps which have been taken in the argument since HARVEY's day, grand steps, and each one opens up ways to further wisdom.

The second part of the Oration describes the intimate share which the Royal College of Physicians of London, HARVEY's college, has taken during the past 300 years in the promotion of preventive medicine. The public services enumerated as attributable to the College are of the first order. Before the General Medical Council took over the preparation of the British Pharmacopœia to do so was the responsibility of the College, laid upon them by their original constitution over a century before HARVEY's discovery. From 1518 to 1858 the official armamentarium of the physician was in the hands of the College. At the latter date the General Medical Council obtained the authorisation of a British pharmacopœia, but by that time the College had supervised the inventory of drugs and turned it from a medley of fanciful remedies, consonant with pre-HARVEY therapeutics, into a valuable compilation. More directly important to preventive medicine than the maintenance of a sound pharmacopœia is the orderly nomenclature of diseases as a necessary accompaniment of the registration of deaths. Here it deserved to be recorded that it was largely due to the public-spirited work of the Royal College of Physicians that the Registrar-General's reports have become the foundation of the best applications of preventive medicine. For other activities of the College having a close association with preventive medicine we refer readers to Sir GEORGE NEWMAN's words; they prove that "undoubtedly HARVEY's College has played a part in national therapeutics which illustrates signally the supreme value of his discovery."

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THE M.O.H. TELLS THE PUBLIC

EVERY medical officer of health reports year by year to the mayor, aldermen, and councillors of the city or borough, or to the chairman of the county council, by which he is appointed. His report covers a wide range of subjects, for he is the pooh-bah of public medicine, often being responsible, in addition to the general health services, for school medical inspection, maternity and child welfare, the control of tuberculosis and venereal diseases; moreover, he may be superintendent of the fever and maternity hospitals, chief administrative medical officer to the public assistance committee, and, it may be, borough meteorologist. Further, his report may include that of the public analyst and of the inspector of factories and workshops.

Nevertheless, it is not quite clear whether the report that he makes is accessible or not to the public. The Minister of Health certainly gives advice as to its form, but he has stated publicly that there are no regulations about publication, and he did not reply directly to an inquiry in Parliament[1] whether members of the public had a right to see it on demand. There have been cases, we are told, where the report of a medical officer of health to his sanitary committee has been held up at that stage and not allowed to go any further owing to its critical character. In some towns the practice prevails of sending a copy of the report to the public library, but this is apparently an act of grace on the part of the medical officer of health, whose attitude varies over the country probably as much as the size and format of his report—a want of symmetry which is the despair of the tidy librarian. One medical officer has recently stated that it is no business of the press to announce whether there are or are not cases of typhoid fever in his borough, somewhat to the surprise of the local journal. In Scotland they do these things rather differently, for ten years ago the Scottish Board of Health suggested[2] that arrangements should be made for judicious local distribution of reports as soon as they are available, and steps taken through the local press and otherwise to bring their contents effectively to the knowledge of the people "as a means of educating the citizens in the more important conditions of public health, of warning them against particular dangers, and inflammatory nodule after the subcutaneous inoculation in the guinea-pig of Hodgkin gland material. Control tissue of various kinds only rarely gave rise to such nodules. Attempts to reproduce this "inflammatory" reaction in passage experiment were unsuccessful.

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[1] See THE LANCET, 1931, ii., 1385.

[2] Ibid., 1923, i., 47.

In 1928 a new plan of campaign was adopted. An executive committee consisting of Sir Thomas Horder, Prof. G. E. Gask, Prof. E. H. Kettle, and Dr. Gordon, was appointed to coöperate in the work and to supervise the various lines of investigation. They had the assistance of two Rose Research Fellows, Dr. Kenneth Stone and Dr. James Maxwell, and also of Dr. L. P. Garrod, Dr. E. R. Cullinan, and Dr. Beatrice D. Pullinger. It was early decided to prosecute inquiries along two main lines: (1) a search for organisms belonging to groups that might conceivably be associated with or responsible for lesions of granulomatous nature and which have in the past been suggested as possible ætiological agents in Hodgkin's disease; and (2) a search for a possible virus. The volume has now appeared which embodies the outcome of this joint investigation; it contains contributions by six workers (Horder, Gordon, Stone, Garrod, Cullinan, and Pullinger), and the major contribution, written by Dr. Gordon, is devoted to a detailed account of the investigations under these two headings. In spite of intensive and amply controlled research no evidence was found incriminating spirochætes, fungi, tubercle bacilli, or diphtheroids as primary and essential ætiological agents. The chief interest of the reader will be directed to some novel and unexpected observations of Dr. Gordon bearing on the virus theory of origin. He confirmed Dr. Twort's observation mentioned above, but was also unable to secure transmission in passage experiment. He then proceeded to investigate the effect of intracerebral inoculation of rabbits with Hodgkin gland macerates. For a few days after inoculation the rabbits would remain quiet. This latent period was followed by symptoms of incoördinate gait and paresis or paralysis of extremities. Death usually occurred at periods varying from a week or ten days to two months. Before intracerebral inoculation it was found advisable to macerate the gland material in the cold for a week or more, and with such technique it was possible to produce this "encephalitic" syndrome by inoculation of glands from five out of six recent cases of lymphadenoma and also of a dried gland removed from a fatal case two years previously. Gland material from a fairly extensive series of controls—carcinoma, sarcoma, leukæmia, tubercle, chronic adenitis, and so forth—failed entirely to produce this syndrome when inoculated by similar routes. Passage of the material through a Chamberland L2 filter did not yield a potent filtrate nor was it possible to produce a similar syndrome in normal rabbits by passage of brain material from rabbits which died. The "agent" responsible for the syndrome could withstand desiccation and was unaffected by 30 minutes' exposure to a temperature of 65° C. Curiously enough, the brains of animals which died showed no lesions of the infiltrative character that might be expected in a true encephalitis, and indeed, so far as we are informed in the present report, there were usually no obvious lesions of any kind present at autopsy. What the nature of the agent may be must, for the moment, remain obscure, but further developments will be awaited with interest. As lending some support to the view that Hodgkin's disease may ultimately be found to come within the virus category, attention is drawn to the recent important work in Sweden and Paris on lymphogranuloma inguinale which is now believed definitely to be a virus disease.

In the brief introductory contribution to the volume Sir Thomas Horder discusses the clinical concept of Hodgkin's disease, while Dr. Stone, Dr. Garrod, and Dr. Cullinan contribute useful information on the pathogenicity and serological classification of yeasts derived in the course of the inquiry from Hodgkin glands and other conditions. The volume closes with an important and profusely illustrated study by Dr. Pullinger of the histology and histogenesis of 39 cases of lymphadenoma. This paper demands most careful perusal and will be of interest not only to students of general pathology but to all histologists who may have in the course of their work to express opinions on glands removed for diagnostic purposes. Dr. Pullinger's conclusion is that lymphadenoma is neither a true malignant neoplasm nor a chronic inflammatory condition. She believes that it has most in common with the leukæmias since "like them it is essentially a progressive hyperplasia of one type of cell" (the reticulum cell).

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HARVEY AND HIS COLLEGE

In the Harveian Oration, delivered last Tuesday before the Royal College of Physicians of London by Sir George Newman, a fresh angle from which to view the patron saint of the College was discovered. This was something of an exploit seeing the number of consecutive years during which a pious estimate of Harvey's work and personality has been put on record in these discourses, which however have not followed any common pattern or had any stereotyped lay-out. On the contrary they form a most interesting corpus, and it is a tribute to the hero and his work that there should always be something fresh to say. Truly Harvey was one of those great men whose work fructifies in so many directions, fundamentally or in detail, that there is always some new tree—or may be forest, some new flower—or may be garden, owing its existence to the seed sown by him.

Sir George Newman sets out in convincing manner the derivation from Harvey's work of many of the preventive measures which are the feature of modern medicine. He divides his address into two parts, consecutive and interdependent, but distinctly two. In the first part he has reviewed, omitting the familiar biography, the position in which scientific medicine stood when Harvey made his discovery, and once again he shows how alive the science of medicine had been from and experience. One of the duties of the Morris Research Fellow will be to give advanced lectures upon the subjects in which he is specialising.

The work of the Institute has been broadened by the building of a new out-patient department and the addition of an electrotherapeutic department which will in the near future include facilities for deep X ray therapy. The radon supply depôt has not been quite working to capacity. The scientific problems connected with mass radiation by radium are now under examination by a special technical committee, and in the meantime the four-gramme bomb has been split into three one-gramme units allocated to the Cancer Hospital, the Middlesex Hospital, and University College Hospital, the remaining gramme being left by the King's Fund at the disposal of the Westminster Hospital. These units are being applied in a new apparatus, illustrated in the report, which can be brought to the bedside of a patient. Finally, the reports mention the receipt of the first consignments of summary cards, numbering about 1700, dealing with patients treated with national radium during the year 1930 when only about half the centres were yet in full working order.

TWO FORMS OF DIPHTHERIA BACILLUS

LAST year Anderson, Happold, McLeod, and Thomson,[1] working in Leeds, produced a paper describing two types of diphtheria bacillus, *B. diphtheriæ* "gravis" associated with severe and toxic cases, *B. diphtheriæ* "mitis" associated with milder cases of the disease. The two types were differentiated mainly by their growth characters on "tellurite chocolate agar" and by their power of fermenting certain polysaccharides, the gravis type being able to ferment starch and glycogen while the mitis type was without this power. The authors made it clear that in their opinion these observations justified a new classification of the diphtheria bacillus and might provide a solution of the much discussed problem of the alleged failure of antitoxin treatment in certain "malignant" outbreaks. It is obvious that the findings if substantiated are of great importance to clinician, bacteriologist, and serologist alike. Perhaps those most familiar with the bacteriology of diphtheria were most surprised at this claim of new discovery on such well-beaten ground. Other workers at once attempted to confirm the observation and at least three papers on the subject have already been published, the latest of which is to be found on p. 884 of this issue. The net conclusions of the three different sets of workers are in contradiction to those of Anderson and his colleagues. Menton,[2] Parish, Whately, and O'Brien,[3] and Wright and Rankin seem to agree that of the differential characters described by the Leeds workers only starch and glycogen fermentation could be relied on as sharp and objective. None of them could find any support for the view that the fermenting strains were any more clinically virulent than the non-fermentors. Parish, Whately, and O'Brien gave special attention to the serological aspects of the problem. They found that gravis and mitis forms were indistinguishable in animal virulence, and, as might have been expected, that animals immunised against the "Park-Williams" strain were completely protected against gravis strains. In therapeutic experiments on rabbits and guinea-pigs no difference could be recognised in the curative value of ordinary antitoxin for the two types. They also made the surprising observation that the gravis strains were consistently poorer producers of toxin in vitro than the mitis strains.

It is obvious from the work of Anderson and his colleagues that some virulent diphtheria bacilli ferment starch and glycogen while others do not; but so far, except in the Leeds observations, no connexion has been shown between this character and the clinical severity of the disease. A possible, though perhaps improbable, explanation of the Leeds findings is that a single "epidemic" strain of the bacillus with gravis properties was responsible for the bulk of the severe cases met with. Only a thorough study of the strains from the point of view of agglutination serology is likely to clear up this point, and it may be mentioned that special difficulties have been met with in the technique of agglutinating tests for the gravis strains, presumably owing to their tendency to form unstable suspensions. It would be premature to pass final judgment at the present moment on a question which, once raised, will have to be pursued to a final solution, but the claim of the Leeds workers to have established their main thesis can obviously not yet be allowed. The nature of "malignant" and "antitoxin-resisting" outbreaks of diphtheria still remains somewhat obscure, but there is little doubt that many if not all such outbreaks can be referred to late or inadequate antitoxin treatment rather than to any essential failure of ordinary antitoxin to act as a specific remedy.

THE HEALTH OF ALEXANDER THE GREAT

DR. Mario Bertolotti has written a book,[1] the latest contribution to the Biblioteca di Scienze Moderne, upon the physical disabilities of Alexander the Great, the wounds which he sustained and the diseases through which he passed, which will obtain interested attention from all students of medical history; when it is considered what the great conqueror suffered, as far as the records can be relied on, his exploits become even more wonderful than they appear in the usual chronicles. An accidental re-reading of Plutarch suggested to the author that a systematic research into the health of Alexander would shed new light on the problems of general history. While it must be left to professional historians to estimate how far this may have occurred, medical readers, who chance to know Italian, will be grateful for some capital reading. Dr. Bertolotti gives authorities for his facts, and has diligently studied the numerous references to Alexander made by a multitude of authors. While he draws his own deductions he makes no violent claims for their originality, and often points to other writers as having made similar reflections previously. The message of this useful historical note is that too little stress has been laid hitherto upon the health of the protagonists by those who reflect on and describe the events of history. Certainly the course of civilisation might have been altered radically in many instances if the physical make-up of the captains and kings had been different, and this should be considered in the estimates of what they did and for what their performances counted. Alexander the Great appears to have had some torticollis and facial asymmetry, despite his personal beauty. It seems that he fractured the base of his skull as a youth, had a penetrating wound of the thorax followed by an empyema, while his life was shortened by malaria. He came to the throne of Macedonia of securing that important coöperation and confidence between them and the health authorities and its staff which is essential to successful health administration." What is officially done in Scotland is no doubt the unofficial practice in many parts of England and Wales, where the reports are discussed at some detail by the local press. Probably every medical practitioner in the area gets a copy and public utility societies, interested in housing and the like, would no doubt be similarly obliged. The medical officer of health also has another way of reaching the local public through the circulation of *Better Health*, issued by the Society of M.O.H.'s, to which he is entitled to add pages of local interest.

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[1] Jour. Path. and Bact., 1931, xxxiv., 667.
[2] Ibid., 1932, xxxv., 651. [3] Ibid., p. 653.

[1] Alessandro Magno. By M. Bertolotti. Turin: Bocca Fratelli. Pp. 416. 56 lire.

Quite recently an interesting attempt is being made to popularise the public health services of local authorities by means of attractive little booklets issued by the council and written, or revised and approved, by the medical officer of health. Such booklets are already in circulation at Bath, Ealing, Ramsgate, and Torquay, and we understand that similar booklets are in preparation for Aberdeen, Belfast, Birkenhead, Kingston-on-Thames, and Wallasey. They are published for the public health department by Messrs. ED. J. BURROW and Co. (Cheltenham and London), to whom credit is due for their attractive form and get-up. Each report contains a directory of public health services in the area, a time-table of infant welfare centres, school medical department, tuberculosis and V.D. clinics, with useful addresses such as those of registrars of births and deaths, relieving officer, public vaccinators, and so on. Emphasis is laid in each on the fact that the public health department is open every day of the week and on Saturday morning to give advice on health matters, or to receive complaints of nuisances, and the statement occurs repeatedly that "no resident need live under insanitary conditions which can be remedied by law." There is also a recurring injunction to the public to raise the standard of care in the distribution of foodstuffs by patronising only those tradesmen who exercise care in handling them. No report emphasises perhaps as much as it might do the accessibility of the medical officer of health compared with that of other municipal officers; it is incomparably easier to get into the presence of the competent sanitary authority than it is of the borough engineer or town clerk. And this is as it should be, although at times it may lead to embarrassment of the health department.

ANNOTATIONS

ANOTHER YEAR OF RADIUM

WE learn from the reports published this week [1] that there is rather less national radium on loan than was expected when last year's allocation was made. This is due to the fact that certain centres, like the Mount Vernon Hospital and the Edinburgh Royal Infirmary, have not qualified for their full complement, although other centres, such as Sheffield and Manchester, have applied for additional loans. The amount of radium now on loan is as follows:—

	grammes.
National Radium Centres	14·655
Regional Radium Centres	0·768
Medical Research Council	1·000
National Physical Laboratory	0·186

the total being 16·609 g., a further 2·482 g. being allocated but not yet distributed. During the year £23,208 has been spent on the purchase of radium and containers, the total value of these now in the Trust's hands being estimated at £217,937. Responsibility for this, described as "the most costly substance known to man," rests heavily on the Commission, which has hitherto been able to obtain a specially low rate of premium owing to the faithful observation of very strict precautions. During the year however breaches of regulations at Liverpool, Edinburgh, and Glasgow have resulted in loss or damage to national radium which may lead to removal, at the discretion of the Commission, of any centre from the list of those privileged to enjoy such low rates. Unfortunately, owing to the rise in the market price of radium, the insured value and the amounts of premium have had to be raised by one-third. On the other hand, as there is now enough radium on loan to provide income to cover the Commission's overhead charges, it has been found practicable to reduce the rate of rental of radium from 2 to 1½ per cent.

The work of the Commission during the year has been concentrated on developing the national and regional centres. Five regional centres have been set up at Nottingham, Norwich, Southampton, Plymouth, and Stoke-on-Trent, to the last two of which a supply of radium has already been delivered. Nearly all the centres have accepted the three cardinal principles laid down by the Commission: (1) the appointment of a specially trained radium officer; (2) the proper coördination of ancillary services; and (3) the acceptance of patients for radium treatment from other hospitals in the area whether voluntary or rate-aided. The Commission reiterates that the principle of concentration implies no lack of sympathy with hospitals not selected as national centres; these it is hoped will coöperate in the task of advancing our knowledge of radium therapy by adopting the approved forms of clinical record and thus providing material for statistical purposes. The voluntary hospitals are pointedly reminded in the report that national radium is available to all patients for whom it is required, even if they are able to meet the full charges of the hospitals to which they are admitted; 80 per cent. however of radium beds must be reserved for the service of ordinary patients whether in the care of voluntary hospitals or of those administered by local authorities. The Commission deprecates any tendency to concentrate upon effecting cures in the more favourable cases to the detriment of a wider effort to relieve suffering in advanced cases which is an important function of radium therapy. The post-graduate centre formed by the liaison between the Mount Vernon Hospital and the Radium Institute has not developed in the expected way and is now regarded as more likely to become a rendezvous for the systematic study of the clinical side of radiotherapy. The appointment of radium officers to the national centres has lessened the need of special technical instruction for the staff of these centres, while many students are seeking clinical information

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[1] Third Annual Reports of the National Radium Trust and Radium Commission, 1931–32. London: H.M. Stationery Office. Cmd. 4173. Pp. 43. 9d.

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At the Royal Institute of Public Health on Wednesday last Sir Ernest Graham-Little delivered an address with this title in which he laid about him manfully. The neglect of Sir Ronald Ross, the inconsistency of the Medical Research Council, the extravagance of subsidising researches along particular lines, the grave expenditure on public health services out of public funds, the lowness of the national physique, the wrongful treatment of our milk-supplies, and the unwarrantable expense of dealing with mental defectives—all alike formed allegations supporting the thesis that "there is a vast waste of money and of effort in our present measures to better the health of our people." That thesis cannot be taken as proved in the general way which Sir Ernest thinks—some of the expenditure, however great, and much of the effort do not constitute waste at all. In supporting his arguments, or rather his asseverations, by quotations from others, he does not seem to be aware that he might be asserting in accordance with his thesis answers to questions on which there is much room for differences of opinion; further, he said nothing of organised efforts which are meeting with success, or of resolutions already formed by competent experts to deal with many of the evils described. It is an excellent thing that a prominent public man should arouse the public conscience; the intention not to gloss over the many unhappy situations in which we live, with their obvious detriment to public health, is commendable; but whoever does these things ought to admit that his revelations are exposing ills which are well-known to many experienced workers, and should not forget to say that scientific and statistical investigation of varied sorts is inquiring into the soundness of diverse broad recommendations for reform. In the latter part of his address Sir Ernest, Member of Parliament for a university deeply interested in the medical profession, was on more certain ground, and in his advocacy of the institution of a pass qualification in medicine, given by the State, as a remedy for examinational procedures that do not serve the purposes of the general practitioner, he was following opinions that have often been expressed. He made no allusion, however, in his address to the grave objections to the institution of two orders in the profession, one of which is hall-marked as superior to the other; while the coincident training of undergraduate and graduate students at our medical schools has difficulties which he did not mention or does not appreciate. In his address to the Institute, we credit Sir Ernest with enthusiasm but not with judgment. He may have moved some hearers to a wish, not previously felt, that the sanitary world should be set aright, but he did not give them well-balanced information.

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POST-GRADUATE LECTURES

WE continue this week the publication of summaries of lectures lately given to post-graduates at teaching hospitals. Prof. de Wesselow spoke at St. Thomas's, Mr. Banister at Charing Cross, and Dr. Hutchison and Mr. Milne at the London Hospital.

DIABETIC COMA

(PROF. O. L. V. DE WESSELOW)

IN the first place, what does coma in the diabetic imply? I think we should agree in attributing it to a lack of active insulin in the patient. In the absence of adequate insulin an inadequate amount of carbohydrate is oxidised, and with this failure to oxidise carbohydrate excessive amounts of the so-called ketone bodies are formed.

Further, in most cases it would seem that this failure of insulin-production is a temporary aggravation of an existing defect in the islands of Langerhans, rather than the last stage of a slow but steady decline in the function of these structures. We are dealing with a temporary crisis of a highly dangerous nature, but if once we can tide the patient over this phase we shall usually find that, as far as his carbohydrate tolerance is concerned, he is in much the same condition as he was before coma supervened; the ultimate outlook is relatively favourable.

What then precipitates this temporary failure in insular function? Undoubtedly in the great majority of cases the factor is infection. Anyone who is accustomed to the care of diabetics realises the disastrous effect of infection of any kind on their carbohydrate tolerance—that is, on their insulin-production. The diabetic clinic in summer is relatively uninteresting; during the winter months, with the onset of respiratory infections, a constant readjustment of insulin dosage become necessary. It is surprising how a scarcely noticed cold will lead to the reappearance of sugar in the urine.

We must aim then at shielding the diabetic from infection. Further, if the diabetic contracts an infection there must be no hesitation in increasing his insulin dosage if sugar and ketone bodies appear in the urine. In the past the risk of coma in the infected diabetic has been enormously increased by a wholly unwarranted fear of hypoglycæmic reactions. The febrile patient was unable to take his ordinary diet. Insulin was withheld for fear of reactions and coma ensued. Actually, the febrile diabetic needs more, not less, insulin; his hyperglycæmia is usually difficult to control, and, however poor his appetite, the dose of insulin can always be covered by adequate carbohydrate in the shape of glucose lemonade or bread and milk.

Now let us turn to the patient in whom coma has developed. The first point that will strike you is the hyperpnœa. This hyperpnœa which, as you know, is the result of stimulation of the respiratory centre by the altered reaction of the blood, is useful, and even essential, in that by removing excessive amounts of carbonic acid from the blood it tends to maintain the reaction of that fluid at something near its usual figure. Without hyperpnœa a change in the reaction of the blood to a level incompatible with life would soon ensue. Hyperpnœa however, when maintained over long periods, is not free from dangerous consequences. In the first place, the heat-loss in the expired air is considerable—hence the low temperature of the comatose patient. Secondly, and more important, enormous quantities of water pass off from the lungs. It is calculated that 5000 c.cm. of water per diem may be lost in this way by the comatose patient against the normal quantity of 500–1000 c.cm. The result of this loss is extreme desiccation. Even though the blood is the last tissue in the body to be affected by desiccation, the blood volume in coma may be reduced by as much as 30 per cent., while the leucocytes, red blood-cells, and proteins of the plasma show a corresponding rise. Desiccation then is one of the most important problems in the treatment of coma.

A second feature of coma is cardiac failure—a progressive increase in pulse-rate and a steady fall in the strength of the heart beat. This is understandable when we consider the strain thrown on the heart by the hyperpnœa, the increased viscosity of the blood, and the possible toxic effect of the ketone bodies. When we add to this the fact that the cardiac muscle is often damaged by a coexisting infection, and that in some diabetics coronary arteriosclerosis is present, cardiac failure is to be expected.

Lastly, it is not always realised that severe renal damage is a concomitant of diabetic coma. This fact, which was well recognised in the last century, has only again come into prominence as an explanation of some cases of failure of insulin therapy. Occasionally a patient recovers from diabetic coma only to die from uræmia. An examination of the urine in coma will usually show the presence of albumin and casts.

The main outlines of treatment are obvious. In the first place, we must inhibit further production of the ketone bodies. This we accomplish by providing enough insulin to allow adequate carbohydrate oxidation to be resumed. Secondly, the existing concentration of the ketone bodies in the tissue fluid must be reduced, and this can only be effected by the kidneys. For the kidneys to do their work ample water must be available, and the renal circulation must be intact. We have therefore to introduce fluid into the desiccated body and as far as we can to support the heart. Lastly, time is of the first importance. In view of possible cardiac and renal failure we cannot afford to temporise.

My own view is that these cases are best cared for in an institution, provided that their removal does not entail a delay of more than an hour or two in commencing intensive treatment. Before transport an injection of insulin should of course be given. Many cases, however, must of necessity be treated in their own homes, where blood-sugar estimations will not be possible. Your difficulty here will be to avoid hypoglycæmic coma while at the same time giving an adequate insulin dosage. This can be effected easily enough by keeping the blood-sugar high throughout the treatment. A high blood-sugar is harmless. It is the excess of ketone bodies in the blood which constitutes the danger. For treatment you will need insulin, glucose, an infusion set, some Fehling's solution, and a 10 per cent. solution of ferric chloride. A nurse is essential for the general care of the patient, to force fluids as soon as swallowing becomes possible, and for the collection and labelling of all specimens of urine passed. As long as glycosuria is present the patient is not hypoglycæmic. The urine will therefore give you warning of the possible presence of hypoglycæmia, and by testing with ferric chloride you can follow the reduction of the ketonæmia. In a deeply comatose patient it is advisable to start which air may enter the circulation at the site of minute wounds of the lung, impelled by the negative pressure existing in the pulmonary veins during inspiration. Sergent, Baumgartner, and Kourilsky[2] have described a case in which, during an operation on the lungs, the hemiplegia and other signs were so clearly indicative of a localised cerebral lesion as to convince them that air embolism was the cause. They cite a number of authors who have had like experiences, and they mention two cases in which observers claim to have detected the site of embolism marked by foci of softening in the brain. Absolute proof that air embolism is the cause of these accidents is, of course, difficult to furnish, chiefly because the presence of gas in blood-vessels post mortem is a not uncommon result of bacterial growth in the cadaver, and therefore no criterion of the state of affairs during life. But Croizier has shown experimentally that small amounts of air injected directly into the carotids of animals can produce manifestations corresponding to those observed in the cases mentioned, and there is little reason to doubt that such accidents as air embolism can occur in man. That they must be rare was shown by M. Joannides and G. D. Tsoulos,[3] who demonstrated that dogs were able to withstand as much as 300 c.cm. of air injected into their femoral veins provided the injection was given slowly (over a period of 30–40 minutes). Probably, therefore, the number of fatal accidents of this kind is exceedingly small in comparison with the number of cases in which air finds its way into the circulation.

BIRTH CONTROL AND EXTRA-UTERINE GESTATION

An attempt to correlate the increased incidence of extra-uterine gestation in Switzerland with the extension of the practice of conception control and criminal abortion has recently been made by Hans Guggisberg.[4] Attempts to prevent conception by the introduction of intra-uterine stems or silver rings, such as that of Gräfenberg, are by no means always successful. He quotes H. Gummert's report[5] of 92 cases in which pregnancy occurred after use of one or other of these methods, 78 of these pregnancies ending in abortion, usually septic. Guggisberg holds that tubes or rings often give rise ultimately to tubal pregnancy, because of the permanent changes set up in the tube following inflammatory complications. He deprecates also contraceptive methods involving the use of vaginal occlusive pessaries, which in his experience may lead to sepsis by causing retention of secretions. Attempts at criminal abortion are not infrequently made in patients who have tubal pregnancy with disastrous results, such as tubal rupture complicated by sepsis. Not only is the diagnosis in such cases extremely difficult, but the dangers of laparotomy are much increased. Two such cases are here related, both of which recovered after laparotomy. Guggisberg holds that the control of family regulation should be undertaken by the State, though he makes no suggestion as to the methods of regulation that the State should adopt. Kurt Kaiser,[6] writing from Silesia, is also of opinion that the increase of criminal abortion has led to a greater incidence of ectopic gestation, but much more evidence will have to be adduced before this can be accepted.

The possibility of injury being caused through the damming back of cervical secretions has been frequently discussed. This possibility especially arises in connexion with close fitting cervical caps made of metal which, in certain continental countries, are placed in position at the end of a menstrual period and left in situ until dislodged by the menstrual flow occurring at the next period. Retention of secretion is unlikely to occur when a rubber cervical cap is employed which is placed in position for short periods of not more than ten hours. It is especially improbable if the rubber cap has a high rubber dome. With this and with the so-called Dutch pessary, which roofs over the vaginal vault, fitting anteriorly above the symphysis pubis and behind in the posterior fornix, the danger is negligible, and it clearly does not arise at all when a sheath is used. The criticism adduced by Guggisberg of the use of contraceptives therefore only applies to certain types of these. In this country the Gräfenberg ring method is now generally regarded as unreliable and potentially harmful.

HUMAN AND BOVINE TUBERCULOSIS

The presidential address delivered before the Hunterian Society on Monday last by Dr. Nathan Raw, was based on his personal experience in hospital and laboratory during the last 40 years, most of the observations being made during his superintendency of the Mill Road Infirmary, Liverpool. In 1901 Koch stated, at an international conference in this country, that bovine tuberculosis could not be conveyed to man, and seven years later he repeated the statement at an international conference at Washington. Dr. Raw told how, in secret session, a group of experts—he and Sims Woodhead representing Great Britain—met Koch and persuaded him to modify his views, and the universal medical view to-day is that bovine bacillus conveyed to the human subject causes a large amount of tuberculosis. The conveyance of bovine bacilli, especially to the young by milk, formed the substance of his address; this concluded with a number of questions awaiting solution, which are enumerated in the summary of the proceedings at the meeting of the society (see p. 900).

The Bradshaw lecture of the Royal College of Physicians of London will be given on Nov. 1st by Dr. Dugald Baird, whose subject will be the Upper Urinary Tract in Pregnancy. On Nov. 8th and 10th Dr. James Collier is to deliver the FitzPatrick lectures on the Development of Neurology from the commencement of the Nineteenth Century to the Present Time; and on the 22nd Prof. L. P. Jacks the Lloyd Roberts lecture, on the Liberal Education of the Body. All these lectures will be given at 5 P.M. in the College, Pall Mall East, and will be open to members of the medical profession on presentation of their cards.

The study of the relationship between oxygenation of the tissues and the maintenance of good cardiovascular function during spinal anæsthesia, annotated in this column last week (p. 852), was made by Dr. M. H. Seevers and Dr. R. M. Waters, of Madison, Wisconsin. We regret the inadvertent omission of the names of the authors.

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[2] Bull. et mém. Soc. méd. Hôp. de Paris, 1932, xlviii., 1008.

[3] Arch. of Surg., 1930, xxi., 333.

[4] Schweiz. med. Woch., 1932, lxii., 691.

[5] Monats. f. Geb. u. Gyn., 1914, xxxix., 417.

[6] Med. Klinik, 1932, xxviii., 1057.

type rest is the only treatment which is of value, and any attempt to make the uterus empty itself is dangerous.

Many factors may be involved in the production of disorderly action of the uterus, as found in the first type. It may result from some mechanical abnormality of the baby; in cases of occipito-posterior presentation, for example, the uterus seldom acts quite as it should. The contractions are short and painful during the first stage and are felt in front instead of at the back as a rule. Early rupture of the membranes and breech presentations may also produce irregular uterine action. The attendant should concentrate on treating the abnormality, not the uterus.

A second cause of disorderly action is muscular inefficiency of the uterus. This may be called true uterine inertia. There are poor, short, not very uncomfortable contractions, and labour may go on as long as 36 hours without the patient being at all exhausted or troubled. This type of case is usually overtreated; it is better to leave the sluggish uterus alone. Incoördinate action of the uterine muscle is a third cause. Nowadays it is unfashionable to talk of uterine polarity, and many obstetricians refuse to accept the idea of a preliminary relaxation of the cervical muscle. Nevertheless, there are some cases in which this relaxation fails to occur, and in which the upper part of the uterus is doing its best while the lower part resists. Rigidity of the cervix is not a good name for this condition, which is really incoördinate action of the uterine muscle. A fourth cause of irregular action takes origin from the higher centres and arises as a result of fear. The action of adrenaline upon excised uterine muscle is to stop or diminish contractions, and the same effect is obtained if adrenaline is injected during labour. When the patient is frightened large quantities of adrenaline are thrown into the circulation.

In a fifth and final type, uterine inefficiency depends not so much on poor uterine action as on a defensive contraction of the voluntary muscles with each pain. This also occurs in frightened patients. Labour usually progresses normally until the pains begin to get stronger, and then progress is retarded. The patient contracts all the muscles of her body with each pain, as though trying to put off the moment of delivery. In these patients miraculous results follow the use of some form of anæsthesia.

In one case of the kind the patient had had one previous child by breech presentation. During her second labour, her husband was continually popping in and out of the room and remarking: "I hope to God it's going to be a boy." He asked his wife repeatedly and minutely how she felt. The nurse, on the other hand, kept saying: "I do hope your baby's all right." When the membranes ruptured the fluid was brownish, and the nurse exclaimed: "There now, look at that! I must ring up the doctor at once." By this time the patient was in terror lest she was going to have a dead baby, and subconsciously she was doing all she could to postpone delivery by contracting up her muscles. At the end of three hours she was extremely tired, and chloroform was started, being given in small doses. Within 20 minutes—as soon, in fact, as the voluntary muscles were relaxed—the living child was born.

The recognition of the various types of uterine inertia begins with antenatal care. Not only the mechanical conditions present but the patient's general health must be considered. It is worth while trying to find out what the patient is feeling about her confinement, but she is often reserved and at first sight she does not appear to be worried. Complete vaginal examination should be delayed until the last fortnight of pregnancy; a vaginal examination is no part of antenatal care during the first half of pregnancy, and those who make one should have a definite reason. At an examination made during the last week or two of pregnancy it is possible to recognise those cases which are going to have disorderly action owing to resistance of the lower part of the uterus. If the vagina is not well lubricated, if the vaginal walls do not readily admit the examining finger and the patient experiences discomfort, there is likely to be difficulty in labour, more especially if the cervix feels as though it has a core of solid rubber.

During labour itself the attendant should be able to distinguish between delay due to muscular incoördination and delay due to nervous inhibition of pains. The patient in whom the musculature is not equal to its job may be in labour for a long time without suffering much. She is able to potter about the room, and is untroubled about herself; if she is given a hot bath and an enema the uterus is often stimulated into action, and she does well. The patient of the second type has short, sharp, irregular pains without much progress being made. She wants to go to bed. If this type of patient is given enemas and baths her fear will be stimulated and no good will be done. When the patient is obsessed with fear, and is showing a defensive contraction of all her muscles at every pain, some method akin to twilight sleep gives excellent results. But the action of the drug used must be supported by a tranquil environment—by pulling down the blinds and by keeping people out of the room. In the late stage of labour, chloroform anæsthesia combined with an injection of pituitrin can be given, but must be used carefully. Chloral, given earlier, is likely to have one of two types of action. After a dose of grs. 30, one patient will go to sleep for some hours and then wake and do well; another will suddenly deliver herself in about 20 minutes, the reason being, of course, that the first woman is of the flaccid type who needs rest, while the second has spasm of some part of the uterine muscle which is relaxed by the drug. The uterus is at last able to do its best, and out comes the baby. Our attitude to our patients should reflect that of King Henry towards his soldiers before the battle, and, slightly modified, the lines might run:

> "O God of battles! Steel my *patients'* hearts;
> Possess them not with fear; take from them now
> The sense of reckoning, if the opposed *hours*
> Pluck their hearts from them."

THE UNDEPENDABLE KNEE

(MR. ROBERT MILNE)

FOR the patient, a knee has not recovered from an injury until he feels he can depend upon it. The knee should be capable of extending until the leg is straight and bending until the calf touches the hamstrings. There should be no lateral movement when the knee is straight, but when the knee is bent it should be possible to rotate the tibia slightly on the femur. When the legs are straight, moreover, there should be no difference between the quadriceps muscles on the two sides. The quadriceps is the most important factor in making a knee stable.

Since the advent of the camera and the cinematograph it has become possible to analyse the mechanism of walking. When the right foot is on the ground and the left foot in the act of passing it, the right knee is seen to be, not straight, but slightly bent. It only straightens when the left foot reaches the ground and it becomes necessary to push off with the right foot to give the body its forward impetus. The angle which the foremost knee makes in walking is about 165°; if there was no muscular action to maintain this angle the knee would collapse. Text-books of anatomy state that the purpose of the quadriceps is to straighten the knee, and though it is true that it treatment with 1 to 1½ pints of normal saline containing 5 per cent. glucose given intravenously. To this 100 units of insulin should be added. The infusion should be given slowly, at least 30 minutes being taken over the process. Thereafter I should advise you to see the patient at least every three hours until you are satisfied that recovery is well started. The indications of improvement which you should look for are diminution in the hyperpnœa, strengthening and slowing of the pulse, recovery of consciousness, and diminution of the ferric chloride reaction in the urine. The further course of treatment must depend on your findings. If improved, another 20 units of insulin covered by 50 g. of glucose every three hours for the next 12 hours will probably suffice to carry the patient on. In severe cases larger doses of insulin, given intravenously, if there are indications of failing circulation, are needed. As long as you cover your insulin by glucose, introduced orally, subcutaneously, or intravenously, and take the precaution of satisfying yourself that glycosuria is present, the risk of hypoglycæmia need not worry you. Adequate insulin and adequate fluid are the two great essentials of treatment.

CHRONIC DIARRHŒA

(DR. ROBERT HUTCHISON)

CHRONIC diarrhœa is a symptom and not a disease, and diagnosis has usually to be made by exclusion. Some form of classification is therefore necessary, and the following is suggested :—

1. *Gastrogenous*, due to achlorhydria or to achylia. Why these sometimes lead to diarrhœa is not understood; it is apparently not a question of "gastric hurry" nor of the absence of the antiseptic action of normal gastric juice. The stools are loose, and may occur either after meals or between them; they contain undigested connective tissue.

2. *Fatty*, where the stools contain undigested fat. This variety includes the rare condition *congenital steatorrhœa*, in which liquid fat is present; *pancreatic diarrhœa*, due to failure of pancreatic secretion to enter the bowel and in which split fat is present in excess, as well as undigested muscle-fibres; *cœliac disease*, met with in children and occasionally in adults, and due apparently to a failure of absorption of fats; and, lastly, rare cases in which *blocking of lacteals*—e.g., in tabes mesenterica—also interferes with fat absorption.

3. *Enteritis*, a catarrh of the small intestine which may arise from various causes—e.g., alcoholism, tuberculosis, and uræmia (eliminative diarrhœa)—but sometimes from unknown causes. The stools are fluid, and contain bile-stained mucus on microscopical examination. They may be offensive from decomposition of proteins (putrefactive diarrhœa), or sour and bubbling from fermentation of carbohydrates (fermentative diarrhœa).

4. *Colonic.*—In this large group the seat of the trouble is in the colon. One may distinguish the following varieties: (*a*) *catarrhal*—a simple catarrh of the bowel—in which the motions tend to occur in the early part of the day (morning diarrhœa); (*b*) *ulcerative*, due to ulcers in the colon. These may be either dysenteric or non-dysenteric (ulcerative colitis); (*c*) *obstructive*, where the diarrhœa occurs as an "overflow." The obstruction may be due simply to an accumulation of scybala (spurious diarrhœa) or to non-malignant—e.g., tuberculous—or, far more commonly, malignant tumours.

In all cases of chronic diarrhœa the stools are apt to contain visible mucus, and, if ulceration is present, blood. Tenesmus is also frequent. The general nutrition, however, suffers less than in cases of enteritis.

5. *Neurogenic*, where the nerve mechanism is alone at fault. One may distinguish as varieties: (*a*) *reflex*, an exaggerated reflex excitability of the bowel. If the motions occur immediately on the taking of food the diarrhœa is spoken of as *lienteric*; (*b*) *emotional* or *psychogenic*, where fear, anxiety, and other emotional states "fire off" the bowel.

DIAGNOSIS AND TREATMENT

The differential *diagnosis* of these varieties involves the taking of a careful history; thorough physical examination, both abdominal and general; an inspection of the stools, both by the naked eye and the microscope; and a digital exploration of the rectum. In some cases it may also be necessary to use the sigmoidoscope; to give a test-meal, and to have a chemical analysis of the motions for fat, &c. An X ray examination after a barium enema is often helpful. In spite, however, of the most careful investigation the cause of the diarrhœa frequently remains unexplained.

Treatment depends upon the cause, and the routine use of astringents is to be avoided. *Diet* is of the first importance, but over-strict dieting is harmful. As a general rule, a low-residue diet is to be chosen, but it must be modified in special cases. Thus, in gastrogenic and in putrefactive diarrhœa meat must be restricted; and in the fatty group, fats; in the fermentative, carbohydrates. *Drugs* are of limited value, but hydrochloric acid is a specific in the gastrogenous group, moderate doses usually sufficing. Calcium carbonate and phosphate are of use in enteritis, especially in the fermentative form, whilst bromides often control neurogenic diarrhœa. Opium should be used sparingly, and chiefly for pain and tenesmus. As a means of "locking up" the bowel in the psychogenic cases it is liable to abuse, but is of great help in small doses before meals in the lienteric type. Emetine should be given in the dysenteric group of amœbic origin, and castor oil in "spurious" diarrhœa. Pancreatic preparations are indicated when unsplit fat is present in the motions in excess. *Lavage* of the bowel can easily be overdone, but is helpful to a limited extent in simple ulcerative colitis, normal saline being probably as useful as astringents. *Vaccines* are generally useless. *Surgical* intervention is the only treatment in malignant and tuberculous obstructive diarrhœa. It is also called for in some cases of ulcerative colitis, ileostomy or cæcostomy being the operations of choice.

UTERINE INERTIA

(MR. BRIGHT BANISTER)

THE subject of uterine inertia is not presented to students in a satisfactory way. Inertia is the property of matter whereby it retains its state of rest or movement in a linear direction unless some outside cause appears to alter it, but the term is commonly used to describe a motionless body. The classical derivation, however, means "without skill," and in considering uterine inertia we are considering why the uterus is acting without skill, not why it is failing to act at all.

It is misleading to talk of primary and secondary uterine inertia, for the two types are diametrically opposed, and are not two phases of the same condition. In the so-called primary type uterine action is sluggish and irregular from the outset of labour, while in the secondary type the uterus is exhausted after having done its best. Treatment in the first type aims at improving the action of the uterus; in the second

SPECIAL ARTICLES

MEDICINE AND THE LAW

Professional Secrecy

SOME account was given in THE LANCET last week of the extent to which the law appears to expect a medical practitioner to disclose information which immemorial professional tradition regards as confidential inasmuch as the knowledge has been revealed by a patient in the course of medical treatment. Mention was made of the carefully framed resolutions of the Royal College of Physicians of London concerning the duties of medical practitioners in relation to cases of criminal abortion, published in 1916, which ran thus :—

> The College is of opinion—
>
> 1. That a moral obligation rests upon every medical practitioner to respect the confidence of his patient ; and that without her consent he is not justified in disclosing information obtained in the course of his professional attendance on her.
>
> 2. That every medical practitioner who is convinced that criminal abortion has been practised on his patient, should urge her, especially when she is likely to die, to make a statement which may be taken as evidence against the person who has performed the operation, provided always that her chances of recovery are not thereby prejudiced.
>
> 3. That in the event of her refusal to make such a statement, he is under no legal obligation (so the College is advised) to take further action, but he should continue to attend the patient to the best of his ability.
>
> 4. That before taking any action which may lead to legal proceedings a medical practitioner will be wise to obtain the best medical and legal advice available, both to ensure that the patient's statement may have value as legal evidence and to safeguard his own interests, since in the present state of the law there is no certainty that he will be protected against subsequent litigation.
>
> 5. That if the patient should die he should refuse to give a certificate of the cause of death and should communicate with the coroner.
>
> The College has been advised :—
>
> 1. That the medical practitioner is under no legal obligation either to urge the patient to make a statement, or, if she refuses to do so, to take any further action.
>
> 2. That when a patient who is dangerously ill consents to give evidence her statement may be taken in one of the following ways :—
>
> (a) A magistrate may visit her to receive her deposition on oath or affirmation. Even if criminal proceedings have not already been instituted, her deposition will be admissible in evidence in the event of her death provided that reasonable written notice of the intention to take her statement was served on the accused person and he or his legal adviser had full opportunity of cross-examining.
>
> (b) If the patient has an unqualified belief that she will shortly die, and only in these circumstances, her dying declaration will be admissible. Such a declaration may be made to the medical practitioner, or to any other person. It need not be in writing, and if reduced into writing it need not be signed by the patient nor witnessed by any other person, though it is desirable that both should be done, or that, if the patient is unable to sign, she should make her mark. If possible, the declaration should be in the actual words of the patient, and if questions are put, the questions and answers should both be given, but this is not essential. If the declaration cannot there and then be reduced into writing, it is desirable that the person to whom it is made should make a complete note of it as soon as possible.

It will be noted that in particular cases of doubt and difficulty the doctor is recommended to consult solicitors ; those best qualified to give guidance are the legal advisers whose work specially familiarises them with problems arising in the course of medical practice and in the defence of medical practitioners.

THE QUESTION OF PRIVILEGE

The resolutions of the Royal College were evoked by a question of disclosure in criminal matters. The lay public, it seems, needs occasionally to be reminded that the principle of professional secrecy has the widest application. In the past few days the question of privilege has been discussed in respect of a chance admission to a public assistance institution. A man had been discovered in Wrotham Park with injuries to the throat and wrist ; he said he had been lying there for four days. He was taken to the Wellhouse Hospital at Barnet where he remained for five weeks. He refused to give his name and, on his discharge (when the full cost of his maintenance was paid), the records described him as "unknown patient of no fixed abode." Police officers, who had questioned him in the hospital, were understood to have satisfied themselves of his identity, but it was no part of their duty to make any public announcement in this respect. The Hertfordshire public assistance committee asked the Barnet guardian's committee (the body responsible for the administration of the hospital as a poor-law institution) for further and better particulars on the ground that the hospital record was incomplete. The latter committee thereupon asked the medical superintendent, Dr. H. R. Segar, for the patient's name. Dr. Segar rightly declined to disclose the patient's secrets though all the ordinary details of the case which the county authority was entitled to know were, of course, forthcoming. The question of disclosure or non-disclosure by the medical superintendent was discussed at a meeting of the guardians' committee. The meeting was private in spite of the protests of one member who complained that the chairman was gagging them. The committee decided by 10 votes to 7 that it was not in the public interest that a doctor should violate professional confidence. This was not a case of compelling a medical witness to answer a question in a court of law. Dr. Segar, of course, has duties as an officer of the local authority. If the body which employs him took the view that his respect for professional secrecy was a breach of his duty to his employers, legal issues might arise over the possible termination of his employment. A local authority, however, which pressed matters to extremes would still have to find a medical practitioner to replace him. The Barnet guardians' committee has happily stood firm for the principle of non-disclosure. This principle is in the public interest ; secrecy is not preserved for the sake of the doctor but for the sake of his patients. It does not appear that knowledge of the name of this mysterious patient is of any supreme public importance. If there is any suspicion of a criminal element in the patient's injuries, that is a matter for the police authorities and has already been investigated to their satisfaction. The sole question for the medical practitioner in the Barnet case was whether the information about the name had this action in rowing or walking upstairs, the chief function of the quadriceps is to prevent the knee from bending too much in walking.

It is the tone of a muscle which is the important factor; tone does not depend on the motor nerves, but possibly on the sympathetic system, and it can be maintained for hours with very little metabolic activity in the muscle. With the adoption of the upright posture the tone of muscles had to be employed to prevent the knees, spine, and arches of the feet from collapsing, and the postural activity of the whole of the human body depends upon it. When a patient sprains his knee the quadriceps wastes, and if, when the joint itself has recovered, he is left with deficient action of the quadriceps, that knee will be undependable and will let him down. It is true that patients who have suffered from infantile paralysis may learn to walk well with a wasted quadriceps, but they do it by developing certain tricks of gait—by leaning forward on a stiff knee in walking—and not by walking normally. Transplantation of muscles is seldom performed now because it has proved to be unsatisfactory. You may transplant the hamstrings to the lateral sides of the patella, but the patient is not grateful, for though he may be able to perform certain movements voluntarily from the functional point of view he is in statu quo. He can get the transplanted muscles to take on the voluntary functions of the quadriceps but they will never take on the function of tone which is essential to the dependable knee. If both knees are injured and the posterior nerve-roots supplying them are divided on one side, the knee will waste on the side on which the nerves are undivided while the knee on the other side will not. There must, then, be a reflex mechanism which is responsible for wasting; possibly this is Nature's way of putting an injured joint at rest. Even if the injury is put right the knee will not recover from the patient's point of view until the quadriceps has recovered its normal size and tone.

When trying to re-develop the quadriceps we must begin by improving the general health, because the strength of the nerve impulses reaching a muscle depends on the general condition of the patient. Massage is an expensive luxury and cannot replace active use of a muscle in the restoration of function. Swedish exercises will not serve to develop tone; this can be achieved by exercises on the lines of operatic dancing—a posture being first assumed and then maintained for a time. We cannot educate a muscle any more than we can educate a liver or a bone, but we can educate the nervous mechanism on which its activity depends and the first thing to do after curing any disability of the knee is to make sure that the quadriceps is equal to that on the other leg.

A common form of trouble in the knee is due to injury of a semilunar cartilage. Often the original injury is trivial—simply a split or a tear of the anterior end of the internal cartilage associated with little pain and no bleeding. But the broken strip may not heal up; it forms a flap which, at a second accident, gets wedged between the tibia and the condyle of the femur; the internal lateral ligament suffers strain and there is considerable pain. Before operation is undertaken for this condition, however, five indications should be present:—

1. There should have been more than one attack.
2. A history of swelling must have been obtained. If there has been nipping of a portion of cartilage the patient will not have escaped without some synovitis.
3. The internal lateral ligament will have been stretched and there will be some lateral movement of the knee when the leg is straight.
4. One thigh will be smaller than the other.
5. The presence of a loose body in the joint must be excluded by X ray examination, as such bodies can be responsible for the same symptoms as an injured cartilage; and removal of the cartilage will not help the patient with a loose body in the joint.

The patient with an injury to an external cartilage has different symptoms. Nipping, locking, and synovitis do not occur, but he feels a scrunch as he extends the knee. If the examiner bends up the knee and rotates the tibia on the femur he will get a scrunch as the cartilage passes over the external condyle. The symptom may be disquieting to a patient who is a professional footballer, but he may be assured that his knee will not let him down in front of a bus.

Paget thought that loose bodies in joints were sequestra, but sequestra are dead, and loose bodies are living fragments of cartilage, possibly with a flake of bone attached, which continue to be nourished by the synovial fluid and to grow. They give signs, symptoms, and history similar to those obtained in cases of injury to a semilunar cartilage, but they are demonstrable by X ray.

A condition which calls for treatment may arise in growing girls as the pelvis gets wider. There may be some genu valgum, and when the quadriceps contracts there is a tendency for the patella to go outwards instead of remaining in its groove. In a bad case it will go right out, but in a moderate case it may become perched on the external condyle. The knee suddenly becomes fixed and cannot be extended, but if the knee is lifted forward the patella clicks back and an effusion into the joint follows; the history, therefore, resembles that of injury to a cartilage. The diagnosis is made by straightening the leg and pushing the unusually loose patella outwards; the knee is then flexed and the patella becomes perched on the condyle. The patient will recognise the pain as being the same as that she experiences when the knee "goes out." The patella can be fitted with a spring and pad to keep it in position and in most cases the condition recovers spontaneously as the patient grows.

In some patients there are bony excrescences round the upper end of the tibia and the lower end of the femur. These may give rise to a sudden snap similar to that observed in cases of nipped cartilage, followed by pain; there will be no effusion into the joint. The differential diagnosis can be made by the absence of swelling and by X ray examination.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. J. S. Austin is placed on the retd. list, with the rank of Surg. Capt.

Surg. Lt.-Comdr. G. G. Newman to be Surg. Comdr.

Surg. Lt. (D) W. C. G. Ford to be Surg. Lt.-Comdr. (D).

T. F. Miles to be Surg. Lt.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. R. L. Stubbs to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS

Lt. S. W. Gabbe (temp. commn.) to be Capt.

M. J. Kohane, from a temp. commn., to be Lt. (on prob.).

TERRITORIAL ARMY

Capt. A. Topping to be Maj.

Supernumerary for service with O.T.C.—Lt. H. H. Kenshole to be Capt. T. H. Wilson (late Offr. Cadet Staff Serjt., Univ. of Lond. Contgt., Sen Div., O.T.C.) to be Lt. supern. for serv. with Univ. of Lond. Contgt., Med. Unit, Sen. Div., O.T.C.

INDIAN MEDICAL SERVICE

R. D. MacRae to be Lt. (on prob.).

Lt. D. L. Trant resigns his commn.

The undermentioned officers relinquish their temp. commns.: Capts. G. L. Puri, D. R. Malhotra, and B. K. Pal.

animals have since been incriminated, notably small rodents, the fox, and the porcupine. Dengue was another disease about which interesting discussions centred, and it would seem that, in addition to the mosquito campaign, preventive vaccination holds out prospects of success. A third Mediterranean disease coming under review was exanthematic Mediterranean fever, which is now known to be conveyed by a tick, the dog being the commonest host of the virus. The congress also dealt with the problem of rats on board ships and the chlorination of water. With regard to the former subject, Dr. Lutrario, former director-general of the Public Health Service of Italy, insisted that the most effective of all the remedies against rats is rat-proofing, and that if the campaign against rats on board ships is to be really effective, it must also be conducted relentlessly in ports and adjoining areas.

UNDULANT FEVER IN FRANCE

The work of Prof. Lisbonne, of Montpellier, is doing much to bring France into line with such countries as Denmark and the U.S.A. where a growing proportion of cases of pyrexia of unknown origin is being traced to Bang's bacillus and other bacilli of the same type. The undulant fever research centre at Montpellier has, in the course of a year and a half's research, discovered 28 cases, at least 20 of which have been verified by bacteriological examinations. Fourteen of these cases have been traced to *Br. melitensis*, and only six to *Br. abortus*. The geographical distribution of these cases is instructive. The abortus cases occurred in such areas as the Aisne and the Vosges, where the *Br. melitensis* of caprine and ovine origin is practically unknown. On the other hand, the melitensis cases occurred in the south and south-east of France. Prof. Lisbonne and his coöperator, Dr. L. F. Vidal, are inclined to consider *Br. abortus* as but slightly pathogenic to man, and they do not think that it will play any but a secondary rôle in human pathology in France. They have much greater respect for undulant fever due to *Br. melitensis* of bovine origin. They and other workers have reasons for believing that the goat and the sheep are passing on their infections to cattle, whence human beings become infected. They therefore disapprove of the practice of farmers in certain areas who let sheep and goats browse with cattle. It is by a process of transmission of infection from goat and sheep, through cattle, to man that they fear undulant fever may become endemic throughout France.

PUBLIC HEALTH SERVICES

Antituberculosis Work in Sheffield

THE campaign against tuberculosis in Sheffield continues to make progress when judged by mortality results. The death-rates in 1931 both from pulmonary and all forms of tuberculosis beat all previous records. Thus these rates per million were 673 and 818 respectively and may be compared with 1001 in 1209 for the first year of the last decade, and with 742 and 896 for England and Wales in 1931. Among the 18 towns in England and Wales with populations exceeding 200,000, Croydon was the only one which obtained more favourable results in 1931 than Sheffield—namely, 663 and 774. There were in Sheffield, during 1931, 232 male and 116 female deaths from the pulmonary form of the disease, so that if the death-rate for the population of over 265,000 females is calculated separately we obtain the rate of 438 per million, a truly remarkable figure if one is familiar with Sheffield's housing problem, or studies the activities of the corporation with regard to slum clearance and demolitions. The grinding industry is still a black spot, and among the 5000 grinders there were 36 deaths in 1931, as compared with an average of 32 for the previous seven years. Dr. John Rennie gives five factors as being the most important in securing the success obtained. (1) The complete coöperation of the medical profession; (2) the provision of adequate sanatorium and hospital accommodation; (3) the treatment of a large number of early cases discovered by the examination of suspects and contacts; (4) intensive work in the isolation of infectious cases; and, latterly, (5) the re-housing of families which include an infectious case of tuberculosis.

Some particulars which serve to illustrate Dr. Rennie's contention may be given from the report of Dr. H. Midgley Turner, the clinical tuberculosis officer.

Of 1515 new notifications in 1931 tubercle bacilli were found in the sputum of 21·2 per cent., and a large proportion of the remaining 78·8 per cent. were in the early and curable stage of the disease. The suspects sent to the dispensary for diagnosis numbered 2697 and 89 per cent. of the notified cases were sent to the dispensary prior to notification. The ultimate diagnosis of the suspects (who paid 12,846 visits to the dispensary) entailed much work and the use of observation beds and skiagrams and a similar statement applies to the examination of 3199 contacts from the homes of notified cases. The beds available for respiratory tuberculosis numbered 511, and a long waiting-list is a thing of the past.

Stress is laid on the importance of diagnosing and treating "minor" tuberculosis in children, and 72 places are reserved at the open-air schools for children selected by the tuberculosis officer. Tubercle bacilli were found in the sputum of seven children, whose names were therefore removed from the school registers and two of these have since died. Of the 1342 infectious cases on the register 51 per cent. had a separate bedroom and 26·4 per cent. a separate bed. Frequently a separate bed is available and not used and this is more common in the somewhat better residential districts than in the poorer districts of the east end.

The scheme for re-housing infected families on special terms began in 1928. Up to now 116 families, including 560 contacts, have been re-housed, of which 78 are still in the scheme, whilst in the case of 38 the special tenancies have been terminated owing to the removal of the need. In 17 cases the re-housed family remains on in a council house on an ordinary tenancy. Other authorities, it seems, are imitating this re-housing scheme.

Variety in School Medical Work

The Ministry of Health has indicated a method of whole-time appointment in which a medical officer would work under the local authority in general sanitary matters and under the county council in connexion with the health of school-children, child welfare, and tuberculosis. Under such a scheme the medical officer would not be so wholly occupied with school medical inspection as he is at present, and though medical inspection is not always dull work, it does as Dr. T. N. V. Potts puts it "run on a narrow gauge" and there are few who do not need the refreshment of occasional variation. It would be of benefit too, if, after a specified number of years of continuous service, a member of the staff could be granted study-leave for post-graduate courses approved by the Board of Education. Opportunity for clinical meetings would be beneficial if difficult cases could be collected and discussed. Hospitals under county management would, Dr. Potts thinks, came to him in confidential circumstances or not. Dr. Segar was in the best position to answer this question. The answer being presumably in the affirmative, he took the only course possible.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

THE TRAINING OF CHILDREN'S NURSES

Prof. Charles MacNeil, whose chair is "child life and health," in addressing the Edinburgh Women Citizens' Association the other day, said that his subject included the study of the body of the healthy child and those influences which maintained it in perfect health. Was there no way by which the women could receive benefit from this study? But before one could reach the mother herself, the education of the nurse was important. What was wanted was to bring up to something like the sick-nurse's level of efficiency the training of that other kind of nurse, the nurse of the healthy baby and the healthy child. In spite of the beginning made with mothercraft schools, Norland nurses, Princess Christian nurses, and child welfare nurses, Dr. MacNeil maintained that their training is still far behind that of the sick-nurse. The training should cover the diet of babies and little children, and the standards of health of an infant from birth up to the age of 5 years. Children's nurses should also be unerring in recognition of slight deviations from those standards. This was really an extensive programme of knowledge, he said; but it was ideal work for women, and no man could do it. There were only two places where such training could be given—the maternity hospitals, to a limited extent, and the child welfare centres. Child welfare nurses had greatly improved the homes of the poor. If he had his way he would increase their numbers in ten years at least tenfold, and give them far more responsible work.

EFFECTS OF ANXIETY

Dr. James Orr, St. Andrews, speaking on worry, said that nowadays a state of anxiety was accepted as a normal attitude, and he felt that this anxiety constituted the gravest menace to the physical and moral well-being of the nation. From an experience of over 30 years in the practice of general medicine, he could affirm, without fear of serious contradiction, that it was the most potent single cause of ill-health and disease in the civilised world at the present time. Day by day, in all classes of society and in every walk of life, one saw the damage done by anxiety with its attendant worry and apprehension. And the sad thing was that it was, in the main, unnecessary and ought to be very largely preventable. Whoever attempted to evade the inevitability of his environment was laying up for himself a miserable and anxious life, whereas he who was willing to meet the problems of his environment fairly and squarely and adapt himself to them would face the vicissitudes of his life with equanimity.

WOMEN'S WORK

At a women's conference at Dunblane Dr. Margaret Martin commented on the pamphlet on women's work lately issued by the International Labour Office, saying that it was inaccurate in its information and that the inaccuracies are bound to be prejudicial to the woman worker. A great deal of the nervous strain and debility she had discovered in working-class women was due, not to the work they did, but to the worry of not knowing where the next meal was coming from; there is more sickness due to unemployment and consequent under-nourishment than to overwork.

Dr. Joan Rose, speaking of the case of the pregnant woman in industrial work, said that employment during pregnancy is really a question for the individual. If the factory conditions are good and medical supervision adequate, it should be possible to deal with individuals instead of bringing in mass legislation to say that the pregnant woman is not fit for work. Any regulations should be permissive rather than obligatory.

THE REVOLUTION IN MEDICINE

At a recent meeting of the Scottish Association of Insurance Committees Prof. E. P. Cathcart, F.R.S., pointed out that faulty nutrition was until recently largely an evil of the towns, but the advent of motor vans had brought about a deterioration of the standard in the country. More costly and often inferior bought articles were steadily replacing the sound, if less decorative, home-made article, with a resultant deterioration in the standard of cookery. In the past the public health attack had been mainly directed against material things like water-supplies, sanitation, and slums. In the future, the main attack would be, indeed must be, on the habits and customs of men. Much could be done to reduce the incidence of severe illness even now if men were periodically examined, whether ill or not, and he was a firm believer in the scheme of examination adopted by certain big insurance companies in America. The great advance of medicine in the future would, he felt certain, be the accurate recognition of the first signs of the disturbance of normality. But man was an individual, and the old adage that it was impossible to teach an old dog new tricks was physiologically true. Hope lay in the young either of this or the next generation. Yet who could devise measures to enmesh the elusive mind of the adolescent female —on whom really depended the success of such attempts?

PARIS

(FROM OUR OWN CORRESPONDENT)

THE FIRST INTERNATIONAL CONGRESS ON MEDITERRANEAN HYGIENE

THE International Congress on Mediterranean Hygiene recently held at Marseilles under the presidency of Prof. Marchoux has yielded many interesting discussions on the diseases, old and new, more or less peculiar to this area. Prof. Marchoux's inaugural address was a concise but comprehensive survey of the history of tropical medicine and parasitology. The parasites which invade human beings in this area are of great variety. One of the latest to be discovered is the *Treponema hispanicum*, described in 1926 by Sadi de Buen, who presented the first report to the congress on this subject. The disease it provokes, Hispano-African spirochætosis, is most troublesome, if not fatal. This recurrent Spanish fever lasts a month or longer, with five or more remissions. The first bout of fever usually continues for three to eight days, and is followed by an apyrexial period of four to six days. The second attack seldom lasts as long as the first. Spontaneous recovery is the rule, and treatment has hitherto proved incapable of shortening the disease. The virus is transmitted by the tick *Ornithodorus erraticus*. The first animal convicted of acting as a host was the pig, and several other

CORRESPONDENCE

TAXATION OF COD-LIVER OIL

To the Editor of THE LANCET

SIR,—The possibility of a rise in the price of cod-liver oil as a result of the Ottawa proposals must arouse some anxiety in the minds of all who are concerned with the welfare of little children, especially those of the poorer class. Cod-liver oil has a value in early life which cannot easily be replaced—unless indeed any adequate supply can be obtained of other fish-liver oils which have similar properties; that there are such is known, and I have myself experimented with them in the treatment of rickets. The oil of *Gadus morrhua* is at present the one in common use, and the curtailment of its availability would be a misfortune for children. The various proprietary preparations assiduously advertised as concentrated vitamins, and some of them as a sort of multum-in-parvo substitute for cod-liver oil, besides being far more costly than the oil itself, lack certain properties which are particularly valuable in that oil, for it is not only as a vitamin-purveyor, but also as an oil with other valuable characteristics of its own that cod-liver oil is of use.

For those whose circumstances make a liberal use of eggs and milk and cream a simple matter, cod-liver oil is unnecessary, but for the poorly fed, who cannot obtain these foods in any adequate quantity, cod-liver oil is of very great value, and it would be a bad day for the children when the price of cod-liver oil rose sufficiently to prevent its use for every child who is needing it—and there are many.

I am, Sir, yours faithfully,
G. F. STILL.

Queen Anne-street, W., Oct. 14th, 1932.

To the Editor of THE LANCET

SIR,—In the Oliver-Sharpey lectures for 1932 I have already expressed a view in entire agreement with the substance of your article on the taxation of cod-liver oil, that "for infants and growing children it is probable that a small daily ration of cod-liver oil, given especially during the winter months, is the surest and most economical procedure . . . to obtain the necessary supply of antirachitic vitamin for the poorer section of the population."

In this country, in winter, no antirachitic effect can be derived from the sunshine, which is not only very limited in amount, but also depleted of those ultra-violet rays of short wave-length, which possess antirachitic properties. Reliance for a supply of vitamin D must, therefore, be placed on diet. The diet of the poorer classes is, of necessity, deficient in this vitamin, which is found only in the relatively expensive foodstuffs; eggs, milk, butter, and other animal fats. In winter moreover the amount contained in these foods is seriously diminished, and the relative richness of cod-liver oil makes even a small ration of the greatest value.

It is evident, therefore, that any steps which may raise the price and lower the consumption of cod-liver oil cannot fail, especially in winter, to have a deleterious effect on the health of the population, involving particularly the well-being of the children of the poorer classes.

I am, Sir, yours faithfully,
HARRIETTE CHICK.

Lister Institute of Preventive Medicine,
Chelsea Bridge-road, Oct. 17th, 1932.

⁂ The increasing use of cod-liver oil in the feeding of stock animals is also of importance to human nutrition, because it tends to raise the vitamin-D content of the milk, butter and animal fats. As Dr. Chick points out, this is seriously reduced during the winter, when sunshine is scarce.—ED. L.

MARMITE IN PERNICIOUS ANÆMIA

To the Editor of THE LANCET

SIR,—I have read with great interest Dr. Goodall's paper (Oct. 8th) on the treatment of pernicious anæmia by marmite. In the opening paragraphs he refers to a previous publication of mine,[1] in which I suggested that the anti-anæmic factor of liver and vitamin B are not identical substances. As this is still my opinion, I should be obliged if you would publish the following observations.

Three cases of pernicious anæmia in the relapse stage were treated by Dr. Goodall with large doses of marmite (half an ounce three times a day), and responded with reticulocyte crises and rises in the blood level. This is not perhaps the place for me to discuss whether the height of the reticulocyte crises and the speed of blood regeneration in these cases were comparable to that obtained by the use of active liver preparations. In my previous publication I reported that one case of pernicious anæmia responded to marmite but others failed to do so, while they subsequently responded satisfactorily to oral or parenteral liver therapy. Since the publication of this paper I have treated with marmite three other cases of pernicious anæmia in the relapse stage; one responded and two failed. Some observations on these cases would appear to be of interest.

About a year ago there were two cases of pernicious anæmia in my wards at the same time whose blood counts were practically identical (just over one million) and whose gastric contents were completely deficient both in ferments and hydrochloric acid, even after histamine injection. They were both placed on marmite, ʒii. three times a day. One responded with a typical reticulocyte crisis and a rise in the blood level to normal, and has since remained normal on ʒi. of marmite three times a day. The other completely failed to show any response, and after three weeks' treatment was given a fish-liver extract made in my department, which produced a 30 per cent. reticulocyte crisis within a week, and a threefold rise in the blood level in three weeks. The only point of difference between these two cases which I could discover was that the one which responded to marmite had been anæmic for less than six months, while the other had been anæmic for three years.

That the majority of patients suffering from Addisonian anæmia fail to respond to vitamin-B preparations is clearly shown by the carefully controlled series of cases recently published by M. B. Strauss and W. B. Castle,[2] in which the administration of 12 g. daily of an autolysed yeast product was entirely ineffective. When this product was incubated with normal gastric juice it was found to be active. The present position in regard to vitamin B in the treatment of macrocytic anæmias may be summarised as follows: It is efficacious in tropical macrocytic anæmia, in cœliac disease, in many cases of sprue, and in some cases of Addisonian anæmia. In the first three conditions the intrinsic factor of Castle is produced by the stomach in normal or subnormal provide an excellent complement to existing services. He writes :—

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[1] THE LANCET, 1931, ii., 1395.

[2] Ibid., July 16th, p. 111.

> "A class of child of particular interest is the one who is subnormal in health without suffering from any complaint to which a label can be attached. Even with the help of information given by health visitors and parents, the diagnosis is very difficult—mostly guesswork based on probability—and everyone faced with such a difficulty wishes for an opportunity of observation such as can only be provided by hospital treatment. Such facilities would form an ideal opportunity for gaining accurate information, and clinical meetings and free discussions would be a real help towards accuracy of diagnosis. General hospitals are too busy and their honorary staffs could not be expected to hold clinical meetings and lead the discussions on such cases unless they hold official positions as consultant medical officers to the education committee. On the other hand general hospitals managed and staffed by officials of the county would amply supply this desideratum."

Another method of increasing the interest of school doctors in their work is the encouragement and organisation of research into problems that are specially found in the work of this service, and whose elucidation is of value to the medical profession as a whole. This method is exemplified in the West Riding report itself by a special investigation into the causes of blepharitis by Dr. R. L. H. Davy, who in 64 cases found the causative factors to be : eczema or dermatitis in 17 ; delicacy with enlarged glands or tonsils or carious teeth in 23 ; defective vision in 26. Doubtless refractive errors were present in a larger number than this, for she remarks how often the chronic cases did not yield to yellow-oxide ointment until a little atropine was added to remove the strain of accommodation. And in a study by Mr. J. Mackay, L.D.S., of the effect on the teeth of biscuits given with milk. Caries, he says, is produced because the milk gums down the biscuit to the buccal convexity of the molars, the cheek assisting to keep the plaque adherent. The resulting cavity though small is troublesome to fill owing to its inaccessible position.

Growth of Subnormal Children

Mentally subnormal children are subnormal in height, weight, and growth. Practically all authorities agree on this. A passage in the report of the chief medical officer of the Board of Education for 1929 runs : "It should be remembered that mental defects of all kinds and degrees bear a closer relation to physical and social conditions than is often assumed." But Dr. Leslie Cronk tells us this does not hold for the special school at Larkhills, Hants, where systematic measurements have been made. Figures given in his report are these :—

Age-group.	Height of M.D.'s.	Standard height.	Weight of M.D.'s.	Standard weight.
15 to 16	61·82	61·8	106·7	99·3
14 to 15	59·38	58·0	93·4	86·1
13 to 14	57·15	56·2	83·2	76·5
12 to 13	55·62	55·0	75·79	71·6
11 to 12	53·75	52·7	70·04	64·6
10 to 11	52·20	51·3	66·43	59·6
9 to 10	51·51	49·2	63·82	54·8
8 to 9	49·84	47·0	59·8	51·0

The standard heights and weights given are the means of the Anthropometrical Committee (1927). Dr. Cronk adds the figures of the Board of Education (1913) and of Dr. Corry Mann (1926) and the measurements of the mentally defective boys at Larkhills are much superior to them all at every age.

The percentage annual increments of growth were for height :—

	14–13	*13–14*	*12–13*	*11–12*	*10–11*
M.D.'s ..	3·99	3·83	3·67	4·06	4·18
Normals ..	4·43	3·73	2·17	3·59	4·21

and for weight :—

	14–13	*13–14*	*12–13*	*11–12*	*10–11*
M.D.'s ..	11·04	10·43	11·22	8·29	10·28
Normals ..	12·07	8·53	6·52	9·41	10·04

Normals being the increments given by the Board of Education.

The comparison is mostly in favour of the boys at Larkhills. The results are striking, although the numbers were small—not much over 50 in all—and the standards for both height and weight have tended to increase during the past five years. Larkhills is, however, a residential school where food and living conditions are excellent. Thus the results, though of considerable interest, do not prove that *under similar conditions* the mentally defective are up to the average stature of the population.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 8TH, 1932

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 17 (last week, 23) ; scarlet fever, 1934 ; diphtheria, 935 ; enteric fever, 62 ; acute pneumonia (primary or influenzal), 664 ; puerperal fever, 43 ; puerperal pyrexia, 94 ; cerebro-spinal fever, 29 ; acute poliomyelitis, 48 ; acute polio-encephalitis, 3 ; encephalitis lethargica, 14 ; dysentery, 18 ; ophthalmia neonatorum, 81. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 11th–12th was as follows :—Small-pox, 44 under treatment, 4 under observation (last week 42 and 1 respectively) ; scarlet fever, 1625 ; diphtheria, 1603 ; enteric fever, 21 ; measles, 232 ; whooping-cough, 320 ; puerperal fever, 24 (plus 9 babies) ; encephalitis lethargica, 231 ; poliomyelitis, 6 ; "other diseases," 153. At St. Margaret's Hospital there were 19 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox or enteric fever, 6 (0) from measles, 4 (1) from scarlet fever, 15 (2) from whooping-cough, 30 (6) from diphtheria, 84 (19) from diarrhœa and enteritis under two years, and 31 (3) from influenza. The figures in parentheses are those for London itself.

The deaths from diarrhœa were still maintained, the highest figures being Liverpool 9, Leeds 6, Hull, Newcastle-on-Tyne, and Birmingham, each 4. Diphtheria accounted for 3 deaths at Hull.

The number of stillbirths notified during the week was 258 corresponding to a rate of 41 per 1000 total births), including 37 in London.

NURSES' HOME AT NORFOLK AND NORWICH HOSPITAL. On Saturday last the Queen opened the new nurses' home at this hospital. The building, which has cost £30,000, forms part of the Queen Alexandra Memorial Wing, and completes an extension scheme that has cost £160,000. It was stated that every parish in Norfolk and every street in Norwich had given to the fund, with the result that it was over-subscribed by £2000, which was used to pay for the fittings and furnishing. The money was handed to the Queen by 155 purse-bearers. The new four-storeyed building contains 170 rooms, of which 103 are bedrooms. Each bedroom measures 10 ft. by 8 ft., and for economy of space is fitted with a built-in wardrobe, consisting of hanging wardrobe, long mirror, cupboard, shelves, and writing table. On each floor there are two toilet rooms fitted with four fixed wash-basins, and four bathrooms, allowing one bath for every seven nurses. Also, there are a shampoo room, a boot room, and a small laundry. Fixed wash-basins, with hot and cold water-supply, are provided in the sisters' bedrooms on the first floor, and private sitting-rooms adjoin the bedrooms of the senior sisters. There is also a sisters' common room on this floor. On the ground floor is a large lecture hall with walls covered with sound-absorbing material, together with a "quiet room" for study.

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MEDICAL NEWS

University of Oxford

On Oct. 13th the degree of Bachelor of Medicine was conferred on A. W. D. Leishman and O. J. Vaughan Jackson.

University of Manchester

At recent examinations the following candidates were successful:—

D.P.H.

Part II.—Charlotte E. Forsyth and V. A. Newton.

University of Dublin

At recent examinations in the School of Physic, Trinity College, the following candidates were successful:—

M.D.

W. E. Hutchinson and T. F. M. Woods.

FINAL MEDICAL EXAMINATION FOR M.B., B.CH.

Part I.—Old regulations: H. L. Connor, C. L. Greer, B. E. W. Aldwell, and P. St. G. Robinson.

New regulations: Marie J. S. O'Toole, W. G. B. Halliden, A. F. J. Delany, J. F. Harbinson, A. E. Fannin, A. R. S. Jessop, R. C. Tyner, H. M. Glover, Doris E. Morton, and D. J. O'Shaughnessy.

DIPLOMA IN GYNÆCOLOGY AND OBSTETRICS

Joseph Borg and Anis El S. El Khishin.

Royal College of Surgeons of England

A quarterly meeting of the council was held on Oct. 13th, with Sir Holburt Waring, the president, in the chair.

Diplomas of Fellowship were granted to George Frederick Langley (Bristol) and William Eric Archer Hughes-Jones (Melbourne and St. Bartholomew's), and a diploma of Membership was granted to H. F. Moseley (McGill and St. Thomas's).

It was announced that Sir Buckston Browne had now completed his gift of £100,000 for building and endowing the Surgical Research Farm at Downe, Kent. Sir Henry Wellcome was admitted an honorary fellow of the College, and Mr. Herbert Alstead, late of Wigan Grammar School, was admitted the third Macloghlin scholar.

The council passed a resolution of condolence on the death of Sir Charters Symonds, past vice-president of the College.

The three museum demonstrations by Sir Arthur Keith, arranged for Fridays, Oct. 21st and 28t hand Nov. 4th, have been postponed.

The Meath Hospital

Our Dublin Correspondent writes:—The Meath Hospital is the only one of the Dublin clinical hospitals which preserves the old custom of opening the session with an address to the students. This duty was performed last week by Sir John Moore, who has now entered on his 58th year of service as a physician to the hospital, having been appointed to succeed William Stokes in 1875. The subject of his address was the Medical Student at Hospital, and he devoted himself mainly to a discussion of the responsibility attaching to the profession of medicine. On the evening of the following day, Sir John presided at a dinner at the Gresham Hotel, at which some 70 present and past students of the hospital and their guests attended. Among the guests were the president of the Royal College of Physicians of Ireland, and the president of the Royal College of Surgeons in Ireland.

Society for Relief of Widows and Orphans of Medical Men

At a quarterly meeting of the court of directors held on Oct. 12th, Mr. V. Warren Low, the president, being in the chair, the death was reported of a widow who had been in receipt of grants since 1918. Her late husband had paid in subscriptions £52 10*s.*, the maximum amount that any member pays. His widow received a total sum in grants of £1100. The death was reported of three members, and application for relief from their widows. They were each granted £50 per annum from the ordinary funds, two, being over 65 years of age, £25 per annum from the Brickwell Fund each, and the third, being under 65, a grant of £10 per annum from the same fund. A sum of £176 15*s.* was voted as special grants to widows, to enable them to continue with the education of their children, who had reached the age of 16, at which age the ordinary grants cease. It was decided to make a Christmas present of £15 to each widow over 75, £10 to each widow under that age, and £10 to each orphan—at a cost of £640. Three new members were elected. Membership is open to any registered medical practitioner, who at the time of his election is resident within a 20-mile radius of Charing Cross. Particulars from the secretary, 11, Chandos-street, London, W.1.

Bio-Chemical Society

The meeting of this society is being held at 4 P.M. to-day, Friday, Oct. 21st, at the National Institute for Medical Research, Hampstead.

St. Peter's Hospital for Stone

A post-graduate course will be held in the pathology department of this hospital, 10, Henrietta-street, London, W.C.2, at 3 P.M. on Wednesdays, from Nov. 2nd to Dec. 21st. A full syllabus may be had from the secretary of the hospital.

Donations and Bequests

The late Mr. Benjamin Hopkin Morris, of Chiswick, left £1000 to Merthyr Tydfil Hospital in memory of his mother, for the endowment of a "Mary Morris" Bed (unless provided in his lifetime), and £1000 to the West London Hospital for the endowment of a "Fanny Hopkin Morris" Bed (unless already given in his lifetime).

University of London Medical Graduates Society

An extra-metropolitan dinner was held on Oct. 13th at the Grand Hotel, Brighton, with Lady Barrett, M.S., the president, in the chair. She pointed out that the society was developing that corporate spirit among the graduates of the medical faculty which the new University building, when erected, should do so much to promote. Mr. McAdam Eccles announced that the membership of the society had now reached 500.

Medical Sickness, Annuity, and Life Assurance Society

Following the quinquennial valuation on June 30th the directors of this society have recommended the following bonuses, subject to confirmation by the annual general meeting on Nov. 16th. Sickness Fund: reversionary bonus, per £1 1*s.* insured, of 12*s.* on all with-profit policies providing for immediate benefit, and ceasing at ages 65 or 60, with proportionately lower bonuses for policies ceasing at other ages, and for those with deferred benefits. Life Assurance Fund: reversionary bonus of £1 3*s.* per cent. on the sum assured in respect of all with-profit whole life and endowment assurances. It is stated that full provision has been made for depreciation of stocks, and that ample reserves set aside for contingencies.

Surgical Instrument Manufacturers' Association

The annual dinner of this association was held at the Holborn Restaurant on Oct. 14th, with Mr. Patrick C. Maw in the chair. After the loyal toasts had been honoured, Mr. Duncan G. Fitzwilliams proposed "The Association," coupled with the name of the chairman. The manufacturing trade and the surgical profession must, he said, stand together. The trade had been badly injured by the tendency of hospitals to buy foreign-made apparatus, but much good had been done by the Government's change of policy. The appeal which he had made by letters to the medical and nursing press had, he hoped, met with a satisfying response; he promised to inquire how many hospitals had adopted his suggestions, and to do his best to interest the council of the Association of Surgeons of Great Britain and Ireland. He could not see, he said, why the people of this country should pay wages to the foreigner when they themselves were out of work. He had tried a complete set of rubber operating furniture, with very satisfactory results, and had determined to install it throughout the hospital, but the manufacturers had made no reply to his request for a quotation made 18 months ago. He told the Association that if its members would manufacture rubber furniture it would sweep the country and entirely displace metal appliances. Mr. Maw, in reply, blamed public bodies as well as hospitals for buying foreign-made goods, mentioning, as an example, the action of a certain county council in specifying on its tender forms a foreign brand of enamel-ware which could be equalled or surpassed in this country. The industry was, he said, largely an hereditary one; his own firm had been founded by his great-great-grandfather, and his grandfather had trained Mr. A. W. Down, the first chairman of the Association. Mr. E. W. Mayer, in proposing "The Guests," warned users of surgical instruments that if no work could be found for the men, in a few years' time there would be no men available for the work. It took six or seven years to train a good maker of surgical instruments, and at present no fresh apprentices were being engaged. Sir Charles Hipwood, director of the National Union of Manufacturers, in reply, spoke on the significance of Ottawa to the industries of the country, and Mr. F. Gladstone Hines, president of the Pharmaceutical Society, acknowledged the help his society had received from the Association, in company with other affiliated bodies.

if all the useful work is retained by one or two men, and none of the others is given a chance to do the bigger things. If the chairmanship and representation on the insurance committee and other outside bodies were by rota, provision would be made for carrying on the work when the older men drop out. The medical profession would do well to look into this aspect of the matter, and even the Minister might consider it worth while to make regulations calculated to arouse more interest in medical administration amongst insurance practitioners in general.

The Defence Trust

The National Insurance Defence Trust was founded in 1919, its trustees being the members for the time being of the Insurance Acts Committee. The objects of the Trust are :—

1. To assist in defraying the expenses incurred in organising or taking any action to protect the interests of the medical profession in connexion with the present National Health Insurance system or any extension or modification thereof.

2. To include, where necessary, financial support of medical practitioners who require such support owing to action taken by them in accordance with any policy laid down or approved by a conference of representatives of local medical and panel committees, or of such committees as may be formed in place of or in substitution for them or either of them, or to which work now discharged by such committees or either of them may, as the result of new legislation, be transferred.

3. The conference referred to in (2) shall take place entirely and solely in the discretion and judgment of the Insurance Acts Committee of the British Medical Association.

In 1926 the panel conference decided there should be no relaxation of efforts to obtain contributions until £250,000 was reached, that information as to the amount of each area's quota should be furnished to all local medical and panel committees, and that any area subscribing its quota might properly suspend further contribution until all other areas had contributed their proper quota or the total amount aimed at had been reached. The present position is as follows :—

—	Percentage of quota subscribed.	Percentage of committees subscribing.		
		100 per cent. or more.	Less than 25 per cent.	Nothing at all.
England ..	73	55	8	4
Scotland.. ..	63	35	18	5
Wales	46	23	47	5

The points which require discussion are :—

(1) What is to be done when £250,000 is reached? Is £250,000 enough?

(2) Are the young people going into practice now in areas where 100 per cent. has been subscribed to make no contribution to defence in case it were needed?

(3) Are the older men in these same areas to cease contributing because £250,000 has been reached, when they are willing to go on with deductions from their panel cheques?

(4) What is to be done with areas which have subscribed nothing in the event of help being needed for defence purposes?

(5) What is the proper use of interest from the investment of these funds? Should it be added to capital or should it be used for purposes which are consistent with the objects of the Trust?

It has been suggested that part of this interest might be used (1) to pay for lectures to final-year students on insurance practice; (2) to help aged and infirm insurance practitioners in their retirement. The interest is already used to defray the expenses of the Insurance Acts Committee, including the rail-fares of its members in attending meetings, as well as the fares of all members of the panel conference who claim them, all of which comes quite definitively within the first object of the Trust. The retirement from the Service of infirm and aged practitioners who have become a danger and a source of adverse comment is also definitely action taken to protect the interests of the medical profession. The same argument might be applied to giving lectures on national health subjects to young men about to qualify; such knowledge would save a doctor many an anxious moment before a medical service sub-committee.

Vacancies

For further information refer to the advertisement columns

Barnsley, Beckett Hospital and Dispensary.—Res. Surg. O. Also H.P. £300 and £200 respectively.

Birmingham and Midland Ear and Throat Hospital.—Asst. Surg. O. £200.

Birmingham, Dudley-road Hospital.—Jun. Asst. M.O.'s. All at rate of £200.

Blackburn County Borough.—Asst. Dentist. £450.

Blackpool County Borough.—Asst. School M.O. £550.

Bradford Royal Infirmary.—H.P. and H.S. Each at rate of £135.

Cancer Hospital, Fulham-road, S.W.—Hon. Neurologist, Hon. Dermatologist, Hon. Gynæcologist. Hon. Ophthalmic Surgeon.

Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Third Res. H.S. At rate of £75.

Chester Royal Infirmary.—H.S. £150.

Colchester, Royal Eastern Counties Institution, &c.—Res. Asst. M.O. £350.

Croydon General Hospital.—Asst. Physician.

Great Yarmouth General Hospital.—H.S. £140.

Greenwich, Dreadnought Hospital.—Asst. Radiologist. 50 gns.

Hertford County Hospital.—Hon. Ophth. Surgeon.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Surgeon to Ear, Nose and Throat Department.

Hove, Lady Chichester Hospital.—Jun. H.P. At rate of £50.

Lincoln County Hospital.—Jun. H.S. At rate of £150.

London Jewish Hospital, Stepney Green, E.—Res. M.O. and Cas. O. Each at rate of £150. Also Jun. Res. M.O. At rate of £100.

Liverpool, Alder Hey Hospital.—Res. Asst. M.O. £200.

Liverpool Hahnemann Hospital, Hope-street.—Res. M.O. At rate of £100.

Liverpool, Smithdown-road Hospital.—Res. Asst. M.O. £200.

Liverpool University.—Junior Lecturer for Dept. of Pathology. £300.

Manchester, Christie Hospital and Holt Radium Institute.—Hon. Asst. Surgeon.

Manchester Royal Children's Hospital, Pendlebury.—Res. Surg. O. At rate of £125.

Middlesex County Council.—Asst. County M.O.H. £750.

Minehead and West Somerset Hospital.—Res. M.O. At rate of £150.

[illegible] *oyal Victoria Infirmary.*—Two Res. [illegible] at rate of £150.

[illegible] *Hospital.*—Jun. Asst. M.O. £350–£450.

[illegible] *and East Cornwall Hospital.*—Res. Surg. O. and [illegible] Special Departments. At rate of £150

Putn [illegible] *Common, S.W.*—Hon. Consultant [illegible] Oto-Laryngologist.

Roya [illegible] *ty-road, E.C.*—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Hon. Asst. Surg.

Royal Fre [illegible] *W.C.*—First H.P. Asst. M.O. [illegible] ological Registrar and F [illegible] at rate of £100.

Royal Wa [illegible] *en, Waterloo-road, S.E.*— [illegible] respectively.

St. George- [illegible] —M.O.H. £950.

St. John's [illegible] *, Leicester-square, W.C.-* [illegible]

St. Mary' [illegible]

St. Olave's Hospital, [illegible] *S.E.*—H.P. At rate of £80.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Anæsthetist.

University College Hospital, Gower-street, W.C.—First Asst. for Children's Dept. £250.

Western Ophthalmic Hospital, Marylebone-road, N.W.—Hon. Asst. Surg.

Whipps Cross Hospital, Whipps Cross-road, Leytonstone, E.—Med. Supt. £1100.

Willesden General Hospital, Harlesden-road, N.W.—Hon. Med. Staff, Ophth. Surgeon.

Willesden, Municipal Hospital, Brentfield-road, Neasden, N.W.—Res. M.O. £250.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Normanby (Yorks) and Whalley (Lancs).

PARLIAMENT

NOTES ON CURRENT TOPICS

Reassembly of Parliament

BOTH Houses of Parliament reässembled on Tuesday, Oct. 18th, after the summer recess.

The business before the House of Lords was purely formal, and the House of Commons devoted the day to the discussion in committee of Ways and Means of the resolutions in connexion with the Bills which are necessary for carrying into effect the agreements reached at the Imperial Economic Conference at Ottawa.

Major ELLIOT (formerly Financial Secretary to the Treasury and now Minister of Agriculture) and Dr. MORRIS-JONES (who has been appointed an Assistant Government Whip) were among the Ministers who took their seats on the Treasury Bench.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 24th.—8 P.M., ODONTOLOGY. Mr. A. E. Rowlett: The Gnathodynamometer and its Uses in Dentistry. Mr. J. Draper Cambrook: A Sequestrum of the Palate.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Mr. W. Horner Andrews: Presidential address. Prof. Edward Hindle (National Institute for Medical Research): The Ætiology of Feline Distemper. Demonstrations: Prof. Edward Hindle: Isospora Bigemina, a Coccidial Parasite of Dogs. Mr. S. J. Edwards: Crystal Violet-æsculum-iron-blood-agar—a Differential Plating Medium for Mastitis Streptococci.

THURSDAY.—8.30 P.M., UROLOGY. Dr. David Band: Chronic Pyelocystitis with Particular Reference to the Ketogenic Diet Treatment. Other speakers: Dr. D. Melville Dunlop and Mr. I. Lawson Dick.

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.)

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 24th.—8.30 P.M., Discussion on Fractures of the Lower Jaw to be introduced by Mr. W. Warwick James and Sir Harold Gillies.

MEDICO-LEGAL SOCIETY.

THURSDAY, Oct. 27th.—8.30 P.M. (at 11, Chandos-street, W.), Sir John Collie: Fraud in Medico-Legal Practice. (Discussion will follow.)

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, S.W.

WEDNESDAY, Oct. 26th.—9 P.M., Prof. W. Langdon Brown: Allergy and Some Allergic Diseases.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.

WEDNESDAY, Oct. 26th.—4.30 P.M., Clinical cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields.

MONDAY, Oct. 24th.—5 P.M., Mr. C. P. G. Wakeley: Tumours of the Alimentary Tract. (Museum demonstration.)

FRIDAY.—5 P.M., Sir Arthur Keith: Demonstration postponed.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 24th, to SATURDAY, Oct. 29th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Series of Lectures on Renal Disease. Tues. at 4 P.M. by Mr. John Everidge: Surgical Aspects of Hæmaturia. (Free to Members.)—MILLER GENERAL HOSPITAL, Greenwich, S.E. Second week of the Course in General Medicine and Surgery. All day, demonstrations, operations, and lectures. Specially suitable for general practitioners.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Clinical instruction daily at 2 P.M. and 6 P.M. Lectures on Tues. and Thurs. at 5 P.M.—CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C. All day course in Diseases of the Ear, Nose, and Throat.—LONDON LIGHT CLINIC, Ranelagh-road, S.W. Lecture demonstration on Physical Medicine, Mon. and Wed., 8 P.M. to 9 P.M.—HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Diseases of Children. Mornings only.—CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C. Week-end Maternity Course. Sat. and Sun. All day.—10, BEDFORD-SQUARE, W.C. Dr. A. Knyvett Gordon will give a demonstration on Clinical Pathology (Epidiascope and Laboratory Demonstrations) on Wed., at 8.30 P.M. (Specially suitable for M.R.C.P. Candidates).—These Courses are open only to Members of the Fellowship.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, Oct. 24th.—10 A.M. to 12 noon, Skin Department, Surgical Wards. 2 to 4 P.M., Medical, Surgical, Eye, and Gynæcological Out-patients, Surgical Wards. 4.15 P.M., Lecture, Mr. Sangster Simmonds (Surgical).

TUESDAY.—10 A.M. to 12 noon, Medical Demonstration, Surgical Demonstration. 2 to 4 P.M., Medical, Surgical, and Throat Out-patients. 4.15 P.M., Lecture, Mr. Hamblen Thomas: Bronchoscopy and Œsophagoscopy.

WEDNESDAY.—10 A.M., Medical Wards, Childrens' Out-patients. 2 to 4 P.M., Medical, Surgical, and Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M. to 12 noon, Neurological Department, Fracture Demonstration. 2 to 4 P.M., Medical, Surgical, Eye, and Genito-Urinary Out-patients.

FRIDAY.—10 A.M., Medical Wards, Skin Department. 2 to 4 P.M., Medical, Surgical, and Throat Out-patients.

SATURDAY.—10 A.M., Medical Wards, Childrens' Out-patients, Surgical Wards.

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL POST-GRADUATE SCHOOL.

WEDNESDAY, Oct. 26th.—3 P.M., Sir Ernest Graham-Little, M.P.: Voluntary Hospitals and their Future.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.

THURSDAY, Oct. 27th.—3 P.M., Dr. Blake Pritchard: Peripheral Neuritis (demonstration).

ST. PETER'S HOSPITAL FOR STONE, POST-GRADUATE COURSE, Henrietta-street, Covent Garden, W.C.

MONDAY, Oct. 24th.—10 A.M., Dr. John Roth: X Ray Demonstration. 2 P.M., Mr. Swift Joly: Operations.

TUESDAY.—10 A.M., Mr. F. J. F. Barrington: Treatment of Stricture and its Complications. 2 P.M., Mr. F. J. F. *Barrington: Operations.* 4 P.M., Mr. Alban Andrews: Out-patient Demonstration.

WEDNESDAY.—11 A.M., Dr. Cuthbert Dukes: Pathological Museum Demonstrations. 3.30 P.M., Mr. A. H. Harkness: Non-specific Urethritis. 5 P.M., Mr. A. H. Harkness: Out-patient Demonstration.

THURSDAY.—10 A.M., Mr. Clifford Morson: Rôle of Radium in Genito-Urinary Cancer. 11 A.M., Wards. 2 P.M., Mr. Ogier Ward: Operations.

FRIDAY.—10 A.M., Mr. Ogier Ward: Cystoscopy in the Female. 2 P.M., Mr. Clifford Morson: Operations. 4 P.M., Mr. Alban Andrews: Out-patient Demonstrations.

SATURDAY.—10 A.M., Mr. Swift Joly: Stone in the Upper Urinary Tract. 11 A.M., Wards. 2 P.M., Mr. J. Sandrey: Out-patient *Demonstration.*

NATIONAL HOSPITAL, Queen-square.

MONDAY, Oct. 24th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Cranial Nerves and Special Senses.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Cranial Nerves and Special Senses.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. Collier: Clinical Demonstration.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Cranial Nerves and Special Senses.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: The Psychoneuroses.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Oct. 26th.—4.30 P.M., Mr. Claude H. Mills: Interesting Urological Cases. Specimens, &c.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Oct. 27th.—9 P.M., Dr. C. Newman: Dysfunction of the Gall-bladder.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Oct. 26th.—4 P.M., Dr. H. J. Churchill: Anæsthetics in General Practice.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

WEDNESDAY, Oct. 26th.—4 P.M., Dr. Chalmers Watson: Food and Problems of Nutrition in Regard to Preventive Medicine.

THURSDAY.—4 P.M., Prof. R. J. A. Berry: Opens discussion on Mental Defectiveness: Medical and Social Considerations.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

WEDNESDAY, Oct. 26th.—5.30 P.M. (at 11, Chandos-street, W.), Dr. W. Brown: Rationalisation.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Oct. 25th.—5 P.M., Dr. A. M. H. Gray: Xanthoma. Herpes.

THURSDAY.—5 P.M., Dr. K. Sibley: Principles of Treatment. Local.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate.

WEDNESDAY, Oct. 26th.—4.30 P.M., Mr. E. S. Burt Hamilton: Nasal Suppuration.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Oct. 25th.—4.15 P.M., Mr. D. L. Sewell: Cancer of the Larynx and its Treatment by Radium.

FRIDAY.—4.15 P.M., Dr. T. H. Oliver: Demonstration of Medical Cases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Oct. 27th.—4.15 P.M., Mr. P. G. McEvedy: Carcinoma Colon.

Mental After-Care Association

A meeting of this association will be held at the Springfield Mental Hospital, Upper Tooting, at 3 P.M. on Tuesday, October 25th. Lord Wakefield will preside, and the speakers will include the Dean of Westminster, Miss Ruth Darwin, Mr. E. J. Sainsbury, and Mr. C. L. de Salis. The hospital will be open for inspection. The address of the association is Church House, Westminster.

Glasgow Post-Graduate Medical Association

A series of lectures will be given at 3.30 P.M. on Tuesdays from Nov. 15th in the hall of the Royal Faculty of Physicians and Surgeons, dealing with some practical problems in the light of recent research. They are open to medical practitioners without fee. At 4.15 P.M. on Wednesdays from Nov. 2nd there will be clinical demonstrations. Special courses in ophthalmology will be held at the Glasgow Eye Infirmary; there will be demonstrations at the Ear, Nose and Throat Hospital, and the Radium Institute will give a course on Radium Therapy. Facilities for the study of clinical obstetrics and antenatal work are offered at the Royal Maternity and Women's Hospital. The secretary of the association is Dr. James Carslaw, 9, Woodside-terrace, Glasgow, C. 3.

Ladies' Medical Golfing Society

At the Autumn meeting, held at Selsdon Park on Oct. 14th, the following competitors were successful:—Cecil Leitch Challenge Cup (best net return): Mrs. Collis Browne (5) and Mrs. R. Y. Paton (14), 79, Mrs. Collis Browne winning on the last 9 holes. Scratch, First Division: Mrs. Collis Browne, 84. Second Division: Mrs. Hobson, 108. Handicap Prizes, First Division: Mrs. R. Y. Paton, 93 – 14 = 79; Miss Griffiths, 97 – 17 = 80; Dr. S. Horner, 90 – 6 = 84. Second Division: Mrs. Palmer, 111 – 19 = 92; Lady Lett, 113 – 19 = 94; Mrs. Mortimer Woolf, 133 – 29 = 104. Best Ball Competition: Mrs. Collis Browne and Mrs. Lewis Smith, 77½. Captain's Prize: Mrs. Collis Browne. Greensomes *v.* Bogey: First, Mrs. Oldershaw (14) and Dr. Horner, 2 down; Second, Mrs. Palmer (19) and Miss Griffiths (17), 2 down.

Fellowship of Medicine and Post-Graduate Medical Association

Arrangements for the coming week will be found in our Medical Diary. A week-end all-day course will take place at the City of London Maternity Hospital on Oct. 29th and 30th. The first of a series of three demonstrations on clinical pathology, designed for M.R.C.P. candidates, will be given by Dr. A. Knyvett Gordon, at 10, Bedford-square, W.C., on Wednesday, Oct. 26th, at 8.30 P.M. From Oct. 31st to Nov. 19th an afternoon course in ophthalmology will be given at the Royal Westminster Ophthalmic Hospital, and there will be a course in neurology at the West End Hospital for Nervous Diseases daily at 5 P.M. from Oct. 21st to Nov. 26th. Other courses taking place during November are as follows: medicine, surgery, and gynæcology at the Royal Waterloo Hospital, Nov. 7th to 26th (afternoons and some mornings); diseases of the chest at the Victoria Park Chest Hospital, Nov. 14th to 26th (all day); venereal diseases at the London Lock Hospital, Nov. 14th to Dec. 10th (afternoons and evenings). Further details of these courses may be had from the secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Birmingham University Dental School

The annual distribution of prizes took place at the Birmingham Dental Hospital on Oct. 13th. Sir Thomas Horder, who presented the prizes, was welcomed by Mr. W. Malcolm Knott, chairman of the surgical committee. In reviewing the work of the year, Mr. Knott said that good progress had been made, and that both the school and the hospital had benefited from their interdependence. He referred particularly to the facilities offered to the students in the study of the use of anæsthetics. The Dental Board of the United Kingdom had made a grant of £500 conditionally on the school doing the same. The money had been spent on new equipment. In conclusion Mr. Knott said that the registration of dentists was going to prove of great benefit to the public, and commented on the many opportunities now offered to the well-trained young man or woman in this profession. Sir Thomas Horder, speaking to the students on the career they had chosen, said that he held heterodox views about careers. He believed that it did not matter what one chose to do so long as one tackled it in the right spirit. He affirmed that the three necessary qualities were courtesy, courage, and concentration. The job his hearers had chosen was one which would bring them into contact with their fellow men and he wished them every success in their calling.

New Operating Theatres at Birkenhead

Lord Leverhulme recently opened new twin theatres at Birkenhead General Hospital. The cost has been £9000; each theatre is 25 ft. long and 18 ft. wide. They communicate, and one of them opens into a corridor giving direct access to the X ray department. The walls are finished in a soft green matt enamel to prevent overstrain and glare; the ventilation is by concealed ducts and electric exhaust fans; shadowless lamps travelling on rails are suspended over each operating table.

International Society of Medical Hydrology

The annual meeting of members and the council meeting of this Society were held in Paris on sunday, Oct. 16th, at the conclusion of the International Congress on Rheumatism which had been attended by a large number of its members from many countries, including South Africa and the United States. In the absence of the retiring president, Prof. W. S. Thayer (Baltimore), the chair was taken by the president vice-gerent, Dr. J. van Breemen (Amsterdam), until the election of the new president, Dr. Paul Ferreyrolles (La Bourboule and Paris). On the retirement of Dr. C. W. Buckley (Buxton) as treasurer, Dr. Lionel Calthrop (Radlett, late of Harrogate) was elected in his place. It was decided to hold the next business meeting of the society at Toulouse in October, 1933, at the time of the Congrès International d'Hydrologie, and the next scientific meeting at Zürich in January, 1934.

London Hospital Dinner

Presiding over a large gathering at the Trocadero on Oct. 13th, Sir Henry Newland echoed Dr. Johnson's: "Sir, when a man is tired of London he is tired of life." Returning to England after 13 years' absence he had set his heart on attending this dinner and felt that his position as chairman made the pomp of emperors look ridiculous. After congratulating the house committee on avoiding Lord Randolph Churchill's mistake of forgetting Goschen, he passed on to congratulate both those whose distinction at the London had led to their appointment at other schools and those whose distinction elsewhere had led to their appointment to the London. In a long series of distinctions of the year he mentioned Sir Ernest Morris's knighthood, Lord Dawson's success as president of the British Medical Association, Mr. G. Northcroft's election as president of the British Dental Association, and Prof. William Bulloch's appointment as chairman of the Lister Institute. The entry to the medical college, he said, was very good, and the entry from Cambridge a record since the war. As to sport, the London had done well in inter-hospital shooting and sailing. (Laughter.) But in Sir Henry's opinion the golden age of the hospital was 1895–1905 when L. A. Smith and Hugh Rigby were R.R.O.'s (and evidently made the most of it). Returning to the present, he said that there would soon be plenty of room for men with little capital to start practice in the country districts of Australia, where life was no longer lonely. In London he had been interested in noting the centrifugal migration of the population and thought that the great hospitals should buy sites cheaply while they could and should move with the tide of humanity outwards to sunlight and fresh air.—Mr. Russell Howard said he had refused to speak (1) because he was a tongue-tied and almost inarticulate Englishman and (2) because he had a life-long grudge against the chairman. In the days when there was but one surgical registrar (a ewe lamb, not a flock) they were rivals for the post and Newland got it. But the real trouble was that Newland then withdrew to Australia and left him to his registrarship and thereafter to a bare existence teaching the obvious to the incompetent. But for this he might have been a successful practitioner with a lock-up surgery. Mr. Howard, nevertheless, admired Sir Henry profoundly because he was one of the few Australians who had returned to their country; because he had never called himself Simpson-Newland; and for other reasons. The fact that he was second president of the Royal Australasian College of Surgeons spoke for itself.

Mr. Hugh Lett then made an impressive appeal for funds for the new students' hostel. This was urgently needed, he said, because even the sons of old Londoners were going elsewhere for lack of the corporate life which was of such immense importance in training for medical practice. The original estimate of £50,000 had been reduced to £23,000; £6000 had been collected; the house committee had voted a further £3000; and now that the whole of the Philpot-street frontage had become available a beginning was to be made with the north wing. He asked in Lord Knutsford's phrase, that everyone should give as much as he could uncomfortably spare; and in this spirit over £250 was contributed within a quarter of an hour by a few of his hearers.

people recommend the remedy, and take the responsibility upon themselves without having any idea that they are preventing their friend or relative from consulting a doctor. Or they advise him to consult a quack, who, for much money, gives him some worthless herb or ointments, and meanwhile the precious time passes away.

The Educational Campaign

Doctors often find themselves in a difficult position when asked to say whether or not a patient is suffering from cancer; we must, however, confess that it is sometimes just as difficult to be the patient. If he consults the doctor when he has an advanced cancer, he is reproached for indifference to his health; and if the doctor does not find anything, his relations and friends accuse him of being afraid and consulting doctors in season and out of season.

The obstacles in the way of an early recognition of cancer are partly due to its insidious development and partly to human faults and virtues, and that is why these obstacles are so difficult to overcome. It is tempting to stop all propaganda, especially as it may cause an exaggerated fear among unbalanced people and turn them into cancerophobes. We hope, however, that educational measures about cancer may help somebody to be properly treated in due time, especially when these measures are concentrated on the points that experience shows to be the public's weak side. The main thing is, by constant repetitions, to hammer the following points into the public mind:—

(1) Cancer is no incurable disease; it can be fully eradicated when treated early.

(2) For the time being we know only two methods for the radical treatment of cancer: operation and X rays or radium, separately or combined.

(3) Cancer often begins without pain or with very slight pain.

(4) Cancer at the onset causes no other symptoms than those following any insignificant disease of the same organ.

(5) Indigestion is not a disease, but a painful symptom produced by many possible diseases, both within and outside the abdominal cavity—e.g., ulcer of the stomach, gall-stones, appendicitis, intestinal diseases, and diseases of the internal sex organs; it may also be due to cancer of the stomach, intestines, liver, and kidneys.

(6) Cancer is so common after the age of 40–50 that everyone must consider the possibility of getting it, even if his previous health has been of the best.

(7) The worst thing that can be done by one who imagines himself to be suffering from early cancer is to give up hope at once and hide the disease, instead of consulting the doctor in time.

THE HOSPITALS OF AMSTERDAM

In Amsterdam, as in England, the function of hospitals during recent years has undergone a fundamental change; at one time the refuge of those who could afford no other care, they have gradually become centres of first-class treatment and equipment, and have begun to draw patients from all classes of society. Dr. J. L. C. Wortman, in an account of the Amsterdam hospitals,[1] writes with regret of the delays which have attended the development of the municipal hospital system in Holland. Repeated schemes have been agreed upon, only to be discarded. "No more striking example can exist," Dr. Wortman remarks sadly, "of the unreliability of the decisions of municipal councils." Nevertheless, two of the oldest hospitals in Amsterdam are municipal. One of these, the St. Elisabeth Gasthuis, was founded in the fourteenth century, and was later combined with the St. Peter Gasthuis, built by a fisherman's guild, a hospital which, besides being provided with a pest-house, gave temporary lodging to vagabonds and homeless persons. A discouraging offer of hospitality was carved over the entrance:

> "Three nights, not longer,
> I lodge who need it;
> The fourth I keep out
> The beggars and the knaves."

Later, in the sixteenth century, the patients of the St. Peter's Gasthuis were removed, bag and baggage, to a block of convent buildings which had been appropriated by the city government, and which were to provide the site of the present hospital. In the seventeenth century a new pest-house was built outside the city, and the plague cases no longer shared the same buildings as other patients; the two hospitals became known as the Inner and the Outer Hospitals. The Outer Hospital was replaced by a new building, the Wilhelmina Hospital, in 1885, and it is significant that even at that time a section was included where private patients could be treated, who would provide a source of income to the hospital. The Inner Hospital has never been completely rebuilt, but has suffered piecemeal reconstructions and additions. The Wilhelmina Hospital is now to become a complete university institution, and is undergoing reconstruction for that purpose. Dr. Wortman remarks that in the pavilion for infectious cases at the Wilhelmina Hospital, "during visiting hours, thick ropes are stretched from each side of the door across the ward, so that visitors can walk along the beds looking at the patients without coming into contact with them." This arrangement is more sociable than observation through a glazed partition, more usual elsewhere, and it would be interesting to learn if it has proved free from the risk of infection in either direction. A third municipal hospital is the Tesselschade, which began as a temporary institution, but which soon became a much-needed permanency.

In addition to the municipal hospitals, Dr. Wortman describes the private hospitals of the city. The Holy Virgin Hospital, built in 1898, was at that time equal to the best institution of its kind in Europe, and has kept pace with modern developments. Many other general and special institutions are described in a work which appears to give a complete account of hospital facilities in Amsterdam.

CONSTIPATION WITH INCONTINENCE

In 1923 I. Thorling described a condition which he called constipation incontinence. His three patients, boys between the ages of 6 and 7, suffered from incontinence of the bowels which he attributed to constipation. His suggestion that such incontinence might prove not to be uncommon, is confirmed by Dr. C. E. Bloch,[1] of Copenhagen, who states that though the text-books do not yet mention this disorder, he has lately observed as many as seven cases. All his patients were children over the age of 7; and they were otherwise perfectly normal and well developed. All had previously had normal control over the bowels. The incontinence had developed gradually, at first only during the day. Later it became more frequent and occurred also at night. It would occur when the children were greatly excited over their exercises and games, and they were unaware of what had happened till the stools were actually in the clothing. One of the most distressing cases was that of a boy between 7 and 8, a pupil in the ballet school of the Royal Theatre, Copenhagen. While he was on the stage, brown spots would appear on the back of his white tights—a display which led to his dismissal. On admission to hospital he was found to be miserable and ashamed. The sphincter of the anus was somewhat relaxed, and the rectum was filled with fæces even immediately after the bowels had acted. In only one of the seven cases was the involuntary action of the bowels accompanied by enuresis; and

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[1] De Amsterdamsche Ziekenhuizen. By J. L. C. Wortman, M.D., formerly superintendent of the university clinics in Utrecht, of the Municipal Medical Service, and of the Tesselschade Hospital in Amsterdam. Lochem, Holland: N. V. Algemeene Periodieken Maatschappij. 1932. Pp. 169. 16s.

[1] Acta Med. Scand., August 29th, p. 248.

NOTES, COMMENTS, AND ABSTRACTS

DELAY IN SEEKING RADICAL TREATMENT FOR CANCER

WORDS TO THE LAITY AND THE LEARNED

BY PROF. P. BULL, M.S. OSLO

ALL doctors know that patients suffering from cancer may be cured if only they are given radical treatment at the beginning. Some of the public also know this; and yet patients suffering from cancer are seldom put under treatment in an early stage of their illness. This is especially true of cancer of the internal organs, which forms the great bulk of all cancer.

What is the cause of this regrettable state of affairs? It may easily be thought that the fault lies with the doctors who have not the ability to diagnose the disease in an early phase. Apart from this, however, the following circumstances mainly prevent an early recognition of cancer: (1) wrong popular ideas of cancer; (2) its insidious progress in the early stages; and (3) the differing attitude of different people towards cancer and the possibility of it.

Many people, perhaps most, are fully convinced that cancer is an incurable disease, which it is no use to fight against. Most people believe that cancer is a painful disease accompanied by an appearance of illness, by ulceration, and by foul discharge. This picture undoubtedly fits many forms of cancer in an advanced phase, but does not at all conform to that of cancer at its outset, when it is very often not accompanied by pain, or any pain there may be is so slight that the patient does not believe it to be of any importance. This idea of pain is so deeply rooted in the public mind that patients often say, "But I cannot be suffering from cancer with no worse pain than this." Nor are any other alarming and characteristic symptoms found at the onset of the disease. It is not accompanied by any inconveniences other than those which may be found in any common and benign disorder. It is not unusual to find a patient suffering from cancer weighing about 90–100 kg. and looking blooming.

Since cancer in the early stages steals upon the patient, it is clear that different people will react to such vague and indefinite symptoms according to their character, according to their prejudices about cancer—in fact, according to their whole view of life. Let us take a few examples.

Various People

Those afraid of doctors.—Those who do not dare to consult a doctor lest their suspicion of cancer be confirmed prefer to go on in uncertainty. The fear of an operation contributes to their attitude, for most people know that operation will probably be proposed if they have cancer. Fear prevents these patients from thinking quietly and soberly; they try to conceal their disease until it is clear both to themselves and to those around them that it has become a question of health and perhaps of life. When they do see a doctor the time for cure has passed, and yet they demand that the doctor shall cure them, and are by now willing to submit to any operation, even if the prospect of a good result is minimal. So in the end it proves not to have been the fear of doctor or operation which held them back, but the fear of death, and it is this fear that makes them an easy prey to the man with the scythe.

If such a patient had at once sought skilful help the doctor might have said: "You are not suffering from cancer." Thereby he would have got rid of an unnecessary anxiety—quite a pleasant result of a consultation. Or the doctor might have said: "This looks doubtful, I cannot say anything without further examinations, which will last a few days." After some anxious days the doctor might have reached the same conclusion: "You are not suffering from cancer." Or he might have said: "I am sorry, but this looks serious, and an operation or treatment by rays is necessary"; but he would have added: "You will probably be quite all right, because you have consulted me in an early phase of your disease."

Those afraid of cancer, the cancerophobes, are quite different. They do not think and do not talk of anything but cancer; at the slightest pain or inconvenience they consult the doctor, and insist that they have a lump in the breast, a sore tongue, and so on, though the doctor cannot find anything wrong. Discontented at his failure they go from one practitioner to another—unhappy creatures, whom we may pity, but they are not suffering from cancer.

Quiet and considerate patients do not at once consult the doctor if they feel some vague pains somewhere, as long as they are fairly fit for work. They think that they must work and earn their livelihood; or they have perhaps just started a new enterprise, where their daily presence is needed; or they have started some special work which must be completed. Perhaps they vaguely feel that everything is not as it ought to be, but resolve when they have finished this or that they will consult the doctor. This commendable energy may often prevent an early acknowledgment of disease.

The optimists know, perhaps, that after the age of 40 or 50 many people die from cancer, but for themselves they may be compared to the soldiers in war: they see their comrades fall, but they always imagine that they themselves will go free. They support this idea by some very plausible arguments: they have all their lives been perfectly sound and healthy and they belong to a family with many examples of longevity. They have always lived a sober life, observing all the rules of health. They seem to think it a terrible injustice that they should get cancer. But the optimists must remember that cancer is merciless and makes no distinction between just and unjust, between rich and poor, between excellent people and rogues, or between sound people and infirm ones; and cancer always comes as a surprise and an inconvenience.

Those feeling impelled to explanations.—Some people suffer from a woeful need to hide their ignorance by explanations of all the phenomena of life, and, worst of all, this satisfies them better than anything else. When these people are ill they always have an explanation ready. Pains are "only rheumatism"; pain or discomfort caused by food is "only indigestion." They are fully convinced that they will get all right again, "they know themselves well enough," and so on. If they feel a lump somewhere, it is only the consequence of a blow that hit them just there a fortnight or so ago. These people, with their self-made explanations, are difficult to treat, and if they get cancer they very often do not consult the doctor until they begin to lose their ability to work and their spirit. When the doctor tells them the real cause of their rheumatism, indigestion, or lump, they are much surprised and raise objections.

The fanatics, through religious conviction or mere stupidity, maintain that diseases do not exist, or in any case that it is unnatural to be treated by a doctor. If these people get cancer they always come too late; they will not consult the despised doctor until "spiritualism" and all sorts of "natural methods" have robbed them of the favourable moment.

Unfortunate advice from relations and friends is another obstacle to early acknowledgment of cancer. When the patient complains of discomfort after food, irregular bowels, irregular bleeding, or indefinite pains, there is always someone who knows an excellent remedy for just that disease. These benevolent

ADDRESSES AND ORIGINAL ARTICLES

PSYCHOLOGICAL FACTORS IN THE PREVENTION AND TREATMENT OF ALCOHOL AND DRUG ADDICTION*

By J. R. Rees, M.D. Camb., D.P.H.

DEPUTY DIRECTOR OF THE INSTITUTE OF MEDICAL PSYCHOLOGY, LONDON

In the far past, before medicine set out to become an exact science, there was, it would seem. considerable insight into the emotional factors in the causation of bodily and mental sickness. With the increasing emphasis on objective facts, much of this was lost. In the last 30 years, and more particularly since the war, the pendulum has been moving very obviously in the opposite direction, to a wider and a saner outlook. The study of the whole individual—human medicine—which necessarily includes the assessment of mental and emotional states as well as structural and physical disorder, is stimulating the imagination and claiming the attention of the medical profession, both general practitioners and specialists of every kind, since it opens doors which had hitherto remained closed. Medical psychology, the least taught, though by no means the least important branch of our work, has therapeutic possibilities which we have only begun to explore.

There is, of course, no difference of opinion about the end-results of the addictions, the toxic effects of alcohol and other drugs with which we are all familiar. Those in themselves present many problems, but we are not discussing them here. One should, I believe, keep an open mind on the question of the degree in which chemical action helps in the formation of the drug habit—certainly there is a vicious circle set up. The effect of increasing tolerance upon the individual may also be important, but I cannot help feeling that beyond doubt the essential causative factor in these conditions is a habit of mind. an attitude towards life. Alcoholism and drug addiction are, in almost every case, the symptoms of a psychological maladjustment. These abnormalities of outlook and conduct are as much symptoms, as a pain in the præcordium may be the symptom of a damaged and badly compensated heart. To treat the symptom may be very wise at times, but it is essential that we should try to acquire a causal therapy.

Very largely, therefore, the problems of prevention seem to me to fall within the sphere of mental hygiene and those of treatment are to be solved by wise psychiatry, though by saying this I do not intend to imply that specialist knowledge is always needed.

The Approach to Addiction

To my mind there is no very obvious and fundamental difference between the psychology of the alcoholic and that of the drug addict. Differences of opportunity will sometimes explain the particular directions in which people indulge themselves. It has occurred to me that often those who take drugs other than alcohol are of a rather less intelligent type than their social equals who over-drink. The mental stimulation of drugs is to them an additional motive for their action.

The most usual reply that I have received when I have asked addicts why they take their particular drug is: "Because I am fed up," though all of them have to add that they now cannot do without it. It is probable that the same answer would be given by a majority of occasional drinkers and by all secret drinkers, though they would naturally couple with that answer the fact that they liked alcohol, because it relieved them of their sense of oppression at having to stand up to the circumstances of life.

Whatever psychological or emotional factors may be at work, it is certain that there are many physical conditions which lead up to "breakdowns" or addiction. Toxæmia, whether from fatigue or from septic foci, a lowered blood pressure, and endocrine failures may be mentioned as some of the many conditions which must be investigated and treated if the individual is to be at his maximum capacity to deal with his problems and habits. Mental defect, epilepsy, and manic-depressive psychoses must also be mentioned for their share in producing addictions in certain cases.

The most important approach to these conditions is, however, without doubt, through their psychological aspects. Unwillingness or inability to meet the strains of life, which finds relief in alcohol, may be the result of an almost infinite number of causes. It is doubtful whether there ever can be a state of addiction without antecedent emotional disturbances. In the main, the cause of addiction is endopsychic—in the personality of the sufferer—though environmental factors precipitate the trouble in the majority of instances. One wonders what were the personal problems of those many hundreds of doctors who, we are told, wrote such glowing testimonials to that well-known product of the Irish Free State! It must at least have appeared to be "good for" them. Their enthusiasm cannot have been merely due to gratitude for a sample.

Maladjustment and Regression

The square peg in the round hole is perhaps the best way of illustrating the maladjustments that occur in the life of every individual. Few of us are always in a position to adapt perfectly to our circumstances in life. Obviously in a great many cases the capacity to adapt is almost entirely lacking. The ordinary practice in psychological medicine in dealing with children is to attempt the alteration of environment, so as to minimise the problems and modify the difficulties for the child. With adults this is not as a rule possible, nor is it indeed very desirable, since it is hard to produce a permanent improvement in this way. The child, as it grows up, should learn to remove some of its own square corners, and the adult neurotic, provided he has reasonable intelligence, has always to do this if he is to be free of his difficulties. Put in this way, it is clear that a good many adults fly to alcohol because it saves them from feeling that they do not fit into life.

Psychological regression is the most important fact in the pathology of most psychoneuroses and in all cases of addiction. Retreat from the difficulties of life is permissible and advisable up to a certain point. Fairy-stories present life to children in a form which they can understand, and make-believe softens a great deal of the undue hardness of reality. We permit ourselves many forms of retreat in adult life; food, bed, holidays, books, and aspirin—all of these have their reasonable place in our scheme of life. The relief of pain or of tension is of real value for our efficiency and happiness. It is a perfectly admissible argument that alcohol has a place also in the life of the ordinary man. The difficult point to decide is just in this respect constipation incontinence seems to differ from the ordinary distraction incontinence of small children, and from the incontinence of mentally defective children. All seven patients had been subjected to severe discipline, most of them had also been under medical treatment, and a few had been treated in hospital without a correct diagnosis being made or a cure effected. The severe discipline these children had undergone had made them quiet, timid, and ashamed. It is probable that bad habits constituted the chief cause of this complaint, the children getting accustomed to suppress the call to defæcate when at play or work. The treatment consisted of an ordinary diet supplemented by 15 to 30 c.cm. of liquid paraffin taken daily. Every day, at a certain hour, the children were made to sit on the chamber, with their feet on the floor, so that they could apply the maximum of abdominal pressure. When as much fæces as possible had thus been evacuated, a glycerin enema was given. Early in the treatment it yielded large quantities of fæces; later the glycerin enema, usually undiluted, was given only every second or third day. In every case complete success followed this treatment.

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* A paper opening a discussion at the Society for the Study of Inebriety on Oct. 11th.

NEW PREPARATIONS

WE have received from Messrs. Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C., three preparations: (1) Iodised "Moogrol"; (2) Stipolac; (3) Concentrated liquid liver extract.

(1) IODISED "MOOGROL."—This preparation for the treatment of leprosy is a mixture of esters of the acids of the chaulmoogric series combined with 0·5 per cent. of iodine. The addition of the iodine is designed to reduce—and succeeds in its object—the irritating properties of the ethyl esters. Preliminary clinical experience confirms that Iodised "Moogrol" is less irritating than plain "Moogrol." At a conference on leprosy, held at Manila in January, 1931, the use of iodised esters, particularly by the intradermal method, was strongly recommended. The method has been employed by the Philippine workers for some years, and the advantages claimed are that it produces a more rapid resolution of the superficial lesions and that it is relatively free from general and local reactions. Iodised "Moogrol" is issued in bottles of 25 c.cm., 100 c.cm., and 1 litre.

(2) STIPOLAC.—This is a preparation for use in the radiographic examination of the gall-bladder, to which the name "Stipolac" Brand Sodium Tetraiodophenolphthalein is given. The product is supplied in two tubes containing (1) "Stipolac" Brand Sodium Tetraiodophenolphthalein, and (2) "Stipolac" Brand Acid Mixture respectively. The contents of the two tubes are to be mixed before administration.

(3) CONCENTRATED LIQUID LIVER EXTRACT is intended to supplement, or replace the whole of, the amount of fresh liver in a daily diet. It is a palatable product, can be taken over long periods, and is issued in bottles of 4 and 16 fluid ounces, 1 fluid ounce containing the equivalent of 8 ounces of liver.

GLUCATOR.—This apparatus for the quantitative estimate of sugar in the urine is supplied by Messrs. H. R. Napp, Ltd., 3 and 4, Clement's-inn, Kingsway, W.C. It is packed in a neat and handy manner and is designed to enable the practitioner to make an accurate quantitative estimation of sugar in the urine in two or three minutes. Very clear instructions for its use are included in the case, as well as colour charts which show the successive tints of the reagent on the addition drop by drop of the urine of a diabetic patient. We can see that the apparatus should be of considerable practical service.

HALIBUT LIVER OIL, COLLOSOL BRAND.—We have received from the Crookes Laboratories (Gorst-road, Park Royal, London, N.W.) this preparation described as a natural concentrate giving 50 times the vitamin A value of the finest cod-liver oil. Halibut oil has been shown to have a high vitamin A content, but its extraction is attended with laboratory difficulties over which the firm state that they have triumphed. It should be added that the preparation is stated to contain a definite quantity—namely, 2000 international units per gramme—of vitamin D.

THE HUMOUR OF MEDICINE

COLLECTIONS of stories illustrating the humorous side of medical practice have appeared before, while in all old jest-books the medical anecdote figures prominently, and is regularly reproduced in modern journalism, touched up to meet topical situations. We have received from *Rinascenza Medica* an Italian compilation in which we find many new and some good jokes, appearing side by side with some old and many poor jokes. The illustrations are also mixed in quality, those reproduced from Italian newspapers being particularly woolly. But for the sake of the better part of the collection "Il Medico si diverte" is worth perusing, and it can be got at 3, Cesario Console, Naples, in return for L.40.

AS OTHERS SEE US

THE *Siècle Médical* for Oct. 15th, under the heading "English hospitals in the search for resources are to institute a lottery in a continental country to tap foreign money, lotteries being forbidden in Great Britain," pictures the situation in the following words: "English hospitals are in a terrible crisis; for private subscriptions, in spite of considerable publicity in the press, are diminishing, and the boards of managements are much disturbed. It is known that, generally speaking, English hospitals are supported solely by private charity, the only State or municipal organisations being some defective enough consultation services and a system of assistance by the 'workhouses,' which partake more of the prison than of the hospital. Nothing in England resembles our powerful and benevolent *Assistance publique.*"

IRISH NATIONAL HEALTH INSURANCE COMMISSION. In p. 864 of our last issue, in referring to the National Health Insurance Commissioners of the Irish Free State, the name of Mrs. Alfred Dickie was inadvertently given as Mr. Alfred Dickie.

Appointments

PARRY, RUPERT, M.B., B.S. Lond., has been appointed Honorary Assistant Ophthalmic Surgeon to the Cardiff Royal Infirmary.

East London Child Guidance Clinic, Bell-lane, E.: P. LIONEL GOITEIN, M.B., B.S. Lond., D.P.M. Lond., Hon. Asst. Psychiatrist. AMY M. THOMS, M.D. St. And., M.R.C.P., Hon. Assistant Psychiatrist.

Births, Marriages, and Deaths

BIRTHS

COTTON.—On Oct. 8th, at Whitecross-road, Hereford, the wife of Dr. O. J. C. Cotton, of a daughter.

MACDONNELL.—On Oct. 15th, at 5, Upper Mount Street Crescent, Dublin (nursing home), to Sheila, wife of J. J. MacDonnell, M.B., of Avoca, Hook, Surbiton—a son.

MARRIAGES

BLAIN—MACLEOD.—On Oct. 15th, at Old Parish Church, Nairn, James Alexander Blain, M.B., Ch.B., to Sheila Louisa, [illegible] O., H.M.I.S., younger daughter of [illegible] and of Mrs. Macleod [illegible]

PEIRCE—THOMPSON.—O[illegible] orge Edward Graves Peirce, M.[illegible] [illegible] hompson, of Wimpole-mews, W.1.

DEATHS

BAILEY.—On Oct. 10th, suddenly, at Rugby-road, Brighton, Henry James Bailey, M.B., C.M., aged 67 years.

BRIDGER.—On Oct. 10th, at Royal-terrace, Southend-on-Sea, Sydney Bridger, M.R.C.S., L.R.C.P., aged 60 years.

JENKINS.—On Oct. 10th, at High Oaks-road, Welwyn Garden City, Herbert Thomas Jenkins, M.R.C.S., L.R.C.P.

PRITCHARD.—On Oct. 14th, at a London hospital, Edward J. Pritchard, M.R.C.S. Eng., L.R.C.P., late of West Side, Wandsworth Common.

SYED.—On Oct. 14th, at King's College Hospital, London, after a very short illness, Hassan Syed, M.R.C.S., L.R.C.P., aged 32.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

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The most important approach to these conditions is, however, without doubt, through their psychological aspects. Unwillingness or inability to meet the strains of life, which finds relief in alcohol, may be the result of an almost infinite number of causes. It is doubtful whether there ever can be a state of addiction without antecedent emotional disturbances. In the main, the cause of addiction is endopsychic—in the personality of the sufferer—though environmental factors precipitate the trouble in the majority of instances. One wonders what were the personal problems of those many hundreds of doctors who, we are told, wrote such glowing testimonials to that well-known product of the Irish Free State! It must at least have appeared to be "good for" them. Their enthusiasm cannot have been merely due to gratitude for a sample.

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* A paper opening a discussion at the Society for the Study of Inebriety on Oct. 11th.

The method that one employs should, I believe, be the one that seems best suited to the individual case. The man whose trouble is primarily the outcome of an hysterical diathesis can probably be helped by the shorter methods. The man who is obsessional in type and whose addiction is part of his compulsive state will need a much more thorough-going analysis. The specialist may need to handle some of the more complicated cases. The general practitioner, while he has not the time and, very likely, not the necessary knowledge to carry out an elaborate analysis, can do a very great deal with the majority of his patients. A little knowledge of psychological mechanisms is so much better than none, and if we are content to let our patients do most of the talking and to listen ourselves, more can be accomplished than most people believe.

This is not the place to attempt any description of the methods of psychotherapeutic approach. I wish to emphasise, however, that with these patients, whether they be in their own homes or in institutions, we are doing less than we might if we are not setting out to find the cause of the illness, and to help them achieve their freedom. We can adjust environment considerably, but we cannot handle problems which are endopsychic without employment of some psychotherapeutic method.

The treatment of the addictions is, like the treatment of all other conditions, very much more easy and more satisfactory if it can be undertaken at an early stage of the illness. If the medical profession recognised the importance of dealing with alcoholism in its beginnings, before the habit is well-established, the results would be more rewarding. Unfortunately our undergraduate medical education does not teach us very satisfactorily to recognise the importance of psychoneurotic reactions. In an overcrowded curriculum, there seems to be little time to discuss the problems which lead up to disorders of the sex life, and to the misuse of drugs. The doctor who is treating such cases needs a great deal of insight and a great interest in the personality of his patient. He must be tolerant, and he must be willing to spend time. With this equipment the general practitioner, who already helps great numbers of incipient alcoholics, would find that he was able to help still more, and to produce more permanent results.

Prevention

The prevention of addiction is a more interesting and a more profitable subject even than its treatment. Ross's discovery of the relation of the anopheles to the spread of malaria has made it possible to get rid of that disease, though as yet we have not managed to carry out all the measures that should be undertaken. In the same way, armed with a considerable amount of knowledge as to the ways in which neurotic tendencies arise in the individual, it should be possible for us, in time, to produce a race of men and women sufficiently well-balanced and adjusted to have no need for the use of drugs in the wrong way. It should certainly be possible to eradicate these disorders, whose symptoms at present constitute so grave a social disease. In this country, education and the improvement in the standard of living have already done much to lessen the problem. As we train men and women, inside and outside the medical profession, to understand the causative factors in the emotional life of the individual, we shall be able to do still more. We need education, but not in the evils of alcohol. So much more can be done by emphasising the advantages and privileges of right living and right thinking, and by inculcating courage and the spirit of adventure.

There is a curiously true ring about the name "Band of Hope." It would be very good if they could be, in fact, bands of hope and courage. Too often, I fear, they have turned into bands of pessimism and of evasion. Children, passing through these organisations, have got a negative impression with regard to life; there has been over-emphasis on the symptom of alcoholism, and the tendency to seek safety has been increased instead of countered. It is a fundamental principle of modern education that, wherever it is possible, one should be positive rather than negative, and should tell people to do certain things rather than not to do others. If we are to help children through education to grow up to a life in which they will not need to take refuge in alcohol, it is, I believe, far better that we should stress the positive principles of living and touch on warnings and prohibitions in the lightest possible manner, if at all. If anyone is in doubt of the effects of prohibitions on the mind of the child and the adolescent, the situation which has arisen in America is informative. We must face these problems sufficiently thoroughly to be able to direct people in the right direction, so that we may say "do" instead of "don't."

The total abstinence pledge has been one of the greatest stand-bys of social reformers in the past. That, however, is also negative in its approach to the problem. There is nothing, in a promise not to drink alcoholic liquors, which fires the imagination. A new form of declaration might be very useful if it presented a picture of a free, courageous, and coöperative life. People who have been brought up as children to value their manhood and their freedom and their varying capacities are not likely to make bad use of them in later life.

Our prophylactic efforts must certainly be directed towards early childhood, for the root of the matter is there. Parental education is being undertaken on a much more widespread scale, and in a far more intelligent fashion. Throughout the country there are bodies like the Home and School Council and infant welfare organisations, which are helping parents to a better insight into their children's minds, and presenting them with wiser methods of dealing with the difficulties of childhood. Even the daily press has now taken up this propaganda, and quite often their effort is of value. The fact that journalists consider the matter of mental health in childhood to have news-value is an indication of the awakening interest of men and women in general. We in the medical profession have constantly to widen our field of work. Preventive work in mental disorder is as much within our field as the treatment of established disorder should be.

To sum up the points which I have tried to make in opening this discussion: The foundations of personality and character are laid in the first few years of life, before seven. Since there is always an emotional causation for addiction, it is essential that we should appreciate and investigate the "pattern of life" of the individual concerned. Treatment by environmental means, and still more by psychotherapy, can cure the patient. Wiser and more understanding treatment of the child in early days will obviate the necessity for that child in adult life to break down under the strain of circumstances and take refuge in alcohol or drugs.

THE GOLDEN AGE OF THE CRAFT OF SURGERY *

By J. R. Learmonth, M.B., Ch.M., F.R.C.S. Edin.
REGIUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF ABERDEEN

I have had some difficulty in selecting a topic for this address, for my most recent interests have been minutely technical and therefore unsuitable. After consideration I decided to offer some observations on surgery as I envisage it; that this is the Golden Age of surgical craft. The particular aspects of the matter that I shall bring to your attention are two in number; the fact that the spirit of a sentence constantly on the lips of John Hunter made this age inevitable, and the mirroring of the age in biological research and in surgical education.

The saying to which I refer was a favourite observation of Hunter's a century and a half ago: "To perform an operation is to mutilate a patient we cannot cure; it should therefore be considered as an acknowledgment of the imperfection of our art." Even for the man who acted as Prologue to the Golden Age of Surgery this was an amazingly astute comment on the surgery of his time, and from its second half it is easy to realise that even in an age still barren of aid from the sister sciences, Hunter had a vision of the surgery of the future. At the present day the criticism has lost some of its significance. It is true that operations have multiplied, for since Hunter's day the abdominal cavity, the cranial cavity, and the thoracic cavity have capitulated to the surgeon, but many of the incursions of the surgeon's knife into previously inviolate territory are balanced by the withdrawal of other forms of disease from surgical treatment; one example of this tendency is the present practice of treating certain types of malignant disease by the application of radium. There is no doubt that in the future the labours of physicists will provide forms of treatment, and those of chemists synthetic substances, which will restrict still more narrowly the craft of the surgeon. The search for the panacea is as old as history; nowadays it has been abandoned, and the search is for selective therapeutic methods, which arm us more effectively against disease. Individually and collectively surgeons must welcome each such innovation, as Hunter himself would have done, even if it leads to jettisoning cherished surgical procedures.

The Background of Modern Surgery

While the treatment of disease is progressing but slowly toward a non-surgical ideal, operative procedures have been so perfected that little is left of the sting of Hunter's comment. At the present time our craft, and I use the word "craft" advisedly, is, it seems to me, in its hey-dey. For a century and more it has had a sure foundation in the finality of regional anatomy. It is steadily acquiring a buttress of ever-increasing strength in the rapidly accumulating knowledge of physiology. We are constantly gaining information about the life-histories of processes of disease, and since "how" matters little, we are more often turning our attention to "why." For nearly a century we have been able to operate without inflicting pain, and within the last few years chemistry has provided us with drugs for stilling pre-operative apprehension, often of almost as great moment. Above all, for three-quarters of a century we have been able to offer operation to our patients in the Lister-given security that with the dangers of the knife need not be considered the even greater dangers of infection. For technical purposes we have at our disposal an imposing armamentarium. Bacteriology has attained the position of a science, and with the unravelling of microbic problems has come an encouraging number of immunological and chemical methods of treatment. The physicist has been a major benefactor; he has provided us with instruments for bringing under direct view certain of the cavities of the body; he has enabled us to divide tissues without attendant loss of blood, and with the aid of Rontgen's rays we can visualise, directly or indirectly, a host of pathological conditions. The physiological chemist has evolved for us methods of assessing the functional capacity of many of the vital organs of the body, so that we can accurately estimate the severity of disease, and more important still, we can gauge not only the time for active interference, but also its desirable extent. In some quarters it is fashionable to decry the use of certain of these aids, but with such criticism I cannot agree. Nearly every one of them has tended to make surgical treatment safer for the patient, and whatever our intellectual attitude, we are not at liberty to dispense with the most trivial procedure that can be used to this end. "Brains," says Dr. Harvey Cushing, "are futile without technique," and we must give weight to the pronouncement of a man singularly gifted with both. Possibly, as has been recently written by Lord Moynihan, the surgeon of to-day may not be so dexterous as the surgeon of pre-anæsthetic days, when the time taken to perform an operation was the all-important factor. It appears to me that the increase in the armamentarium of the modern surgeon has more than compensated for the loss of some manual skill, although a pretty subject for debate would be the results obtainable by a surgeon of the old régime, had he available only anæsthesia and asepsis of all our present accessories.

Acquisition and Nature of the Art

Were surgery a craft alone, the setting that I have described should provide that success in its practice would be limited only by the situation and the extent of processes of disease. Manifestly, its limitations are narrower, and the explanation is to hand; surgery is also an art. The acquisition of surgical art is one of the most valuable products of experience; and in experience is included not only personal experience, but also familiarity with the writings and with the practice of the masters of our profession. To a fortunate few surgical judgment seems to come early and without effort. For the majority the development of surgical art is at first a conscious process, and each necessity for displaying it entails the deliberate weighing of all immediate and remote factors bearing upon the problem. As experience increases, decisions are reached by mental short-cuts, and to me the supreme intellectual satisfaction in the practice of surgery is the realisation, as occasion arises, that a decision which proves to be correct has required no laborious process of integration. That most

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analysis of the type which Freud has called "psycho-analysis." In between these two extremes there are many analytical methods employed, which make use of the method of free association and of dream interpretation, but which are directed somewhat more by the physician than would be the case in psycho-analysis. For the majority of patients with whom we have to deal, this is adequate, and analysis conducted in this way is naturally quicker than by the orthodox Freudian method.

The method that one employs should, I believe, be the one that seems best suited to the individual case. The man whose trouble is primarily the outcome of an hysterical diathesis can probably be helped by the shorter methods. The man who is obsessional in type and whose addiction is part of his compulsive state will need a much more thorough-going analysis. The specialist may need to handle some of the more complicated cases. The general practitioner, while he has not the time and, very likely, not the necessary knowledge to carry out an elaborate analysis, can do a very great deal with the majority of his patients. A little knowledge of psychological mechanisms is so much better than none, and if we are content to let our patients do most of the talking and to listen ourselves, more can be accomplished than most people believe.

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philosophic of surgeons, Sir Benjamin Brodie, put the matter thus:

> "I cannot well understand what I have observed to happen in myself without supposing that there is in the human mind a principle of order which operates without the mind itself being at the time conscious of it. You have been occupied with a particular investigation; you have accumulated a large store of facts, but that is all. After an interval of time, and without any further labour, or any addition to your stock of knowledge, you find all the facts you have learned in their proper places, although you are not sensible of having made an effort for the purpose."

It may be added that these words are applicable to the whole field of intellectual endeavour and not to surgery alone, although they have a special significance in the field of biological research.

The Complexities of Surgery

I do not wish to give you the impression that in this golden age of his craft a surgeon can be complacent; far from it. Knowledge of his own shortcomings, and perusal of the scientific literature of the world, preclude any such attitude. Indeed, his most present feeling must be one akin to despair at the multitude of problems that cry for solution. The complexity of the matter is increased by the fact that a surgeon rarely deals with a problem in pure biology. If he could put his hypotheses through the mill of mathematics, that infallible touchstone of some of our scientists: if he could ask the test-tube to deny or to affirm: if he could segregate each ponderable factor, and analyse it in the experimental laboratory, then his tasks would be far less weighty, his responsibilities enormously lighter. But the surgeon is a dealer, not only in processes of disease, but also in human affairs. For him each problem is coloured by human nature, and its solution varies with a host of economic, social, and personal peculiarities. Each adequate solution must outline a course of action that is understood by, and acceptable to, the patient and his friends. In short, although he may, and usually does, reach his opinions by a process of reasoning conducted in the vocabulary of his profession, in his practice he is debarred from stating his argument and his conclusions in scientific terms. He must translate his opinions into language that is intelligible to the laity, and in my experience the premisses of his argument are the hardest so to construe. He must be prepared for suggested alterations in his plans, on grounds other than surgical; he who has the faculty of accepting these graciously is assured of at least material success. It is fortunate that these complex aspects of his profession do not in the very least tend to overburden the surgeon. On the contrary, they provide for him an almost unique fascination, which compensates for the laborious attention to the routine of detail, with which much of his active work is of necessity occupied.

It is true that a surgeon must concern himself with the inexhaustible problems of particular sciences. Although he must constantly keep before him the desirableness of turning to practical account the discoveries of the laboratory, it does not by any means follow that he should discourage researches that at first sight seem merely academic, for there is hardly anything biological that is alien to surgery. As pieces are added to the biological mosaic, it is often found that scraps of information, hitherto irrelevant, become first fundamental and finally utilitarian. The dictum of Froude, that the only real knowledge is that which a man can use, when applied to biological knowledge, must carry two qualifications: the first, that another man may be able to utilise a seemingly unimportant fact; the second, that biological knowledge is not infrequently acquired out of sequence, so that in time it may be possible to place such a fact in its proper setting, and in this it may prove to be indispensably useful.

Of more significance to the surgeon is the fact that neither his training nor his duties fit him to investigate many of the basic problems of function, whether the function be normal or pathological. The medical curriculum of the surgeon does not provide him with a course in logic, so that he cannot indisputably write *quod erat demonstrandum* at the end of many of his theorems. He cannot be expected to master the minutiæ of biophysical and biochemical methods, so that in many cases he is unable to start his researches at the beginning. Most of all, perhaps, he is haunted by the thought that what may work out well enough in the test-tube, or in the experimental animal, may be fraught with danger for his patient. In my view, too much emphasis has been placed on the last possibility, for the sum of benefits derived from the application to mankind of observations made on animals has far exceeded the harm.

Specialisation

One result of the many additions to the craft of surgery has been the creation of surgical specialists. By restricting his work to it, a surgeon may hope to round out his knowledge of a special subject on a biological basis. One obvious danger in such an arrangement is that of too early specialisation, so that the surgeon suffers from a loss of perspective; my own view is that a young surgeon's angle of incidence upon his specialty should be a very obtuse one, and fortunately in this country that is likely to be the case. Another defect in early specialisation lies in a lack of any arrangement providing that restriction of practice to a given subject automatically implies proficiency in it. On the other hand, specialism has two undoubted advantages. One of these is the intellectual satisfaction derived from comprehensive knowledge of a given subject, an aspect of the matter on which the elder Kocher was insistent. The other is the undoubted gain to the patient, whose malady is cared for by a surgeon familiar with all its peculiarities. It has been my experience that specialists who have risen high in the profession, and who have gained and retained the respect of their fellow practitioners, are the most conservative of surgeons, and most unlikely to allow themselves to be unduly influenced by their special knowledge. One other point; we are at a professional cross-roads in this country as regards specialisation. I would like to urge that the planes of cleavage between specialties should be vertical, and not (as there is some tendency to make them) horizontal. I mean by this, that for purposes of specialism the body should be divided into a series of functional units, rather than into a series of systemic units. Under the latter system there would be a perpetual necessity for the correlation and interlocking of separate specialties. Under the former, not only would the surgeon be trained to treat not a particular pathological condition, but the patient; he would also be infinitely better equipped to contribute his bounden quota to the progress of hominal physiology. And if surgical specialties there must be, and so dividing walls, we must make it our business to see that the walls are low, so that each specialist has an unhampered view of the work of his fellows, and we must arrange that the paths converge at frequent intervals into clearings, where all surgical lore becomes common property. So much for specialism in relation to craft; it must be remembered that an at least equally important aspect of the matter concerns the patient as an individual. In assessing the influence of this aspect no craftsman-specialist can hope to approach the authoritative position occupied by the patient's family physician.

The Puzzle or the Quest

With so many tests for this and that at his disposal, there is a temptation for the student to regard clinical work—and that is the supremely important part of a surgeon's training—as an exercise in the solution of so many puzzles, which require for their solving only the placing of each report in its proper setting. I mention this tendency only to urge that it be resisted. It is true that no avenue of approach to a clinical problem should be neglected that provides a possible additional factor of accuracy in diagnosis and thus of safety for the patient. Sometimes the result of a particular test may be irrefutable but it is, I think, usual to find that when a doubt remains after the clinical examination has been completed and the results of tests are available, the view of the trained clinician proves to be correct. If a struggle must be joined with the temptation to rely overmuch on laboratory tests, the most powerful ally that can be called to one's aid is clinical imagination. Each problem must be investigated afresh, and not dismissed as identical with a former one. Even if the surgical problems seem similar, the personal problems most assuredly differ one from the other, and it is only by the maintenance of an unprejudiced mind that the various features of a case can be honestly appraised and those of significance selected. If this method be pursued, the study of a surgical problem, whether complex or apparently simple, becomes not so much a matter of deciding upon a diagnosis or upon some particular form of treatment, as an adventure in both hominal physiology and hominal psychology; and as such it must be approached with reverent determination. Great as have been the advances, much remains to be accomplished in this field, and each of us, whether student of surgery or teacher, must take up his appointed place in an expeditionary quest which will occupy the whole of his professional life.

Preventive Surgery

One other modern movement influences present surgical education. I refer to the rapid expansion of preventive medicine, which encourages the surgeon to devise measures for the prevention of conditions, to the relief of which he formerly devoted his operative ingenuity. In other words, to the surgeon's responsibility for the life, or the comfort, or the economic efficiency of his fellow men, is being added responsibility for his health. As to this, no one has put the obligation better than Montaigne, himself far from a friend to the profession. "Health is a very precious jewele, and the onely thing, that in pursuite of it deserveth, a man should not onely employ, time, labour. sweate and goods, but also life to get it; forasmuch as without it, life becometh injurious unto us." And let me add that by assuming responsibility for the health of individuals, a surgeon takes his share of a greater responsibility, that for the health of the nation.

Thus my final point has concerned this movement to eliminate the need for some of the activities of the surgeon, a movement sensed by Hunter's prophetic soul. And I may fittingly close this address by declaring the faith that is in me; that a century and a half of surgical endeavour has been directed to removing any grounds for his stricture—not yet a completed task. but one which surgeons are proud to think has never lacked continuity. To fit ourselves for this task is an inescapable duty, yet one which is in prospect alluring. and in execution entrancing.

THE ACTIVATION OF INSULIN

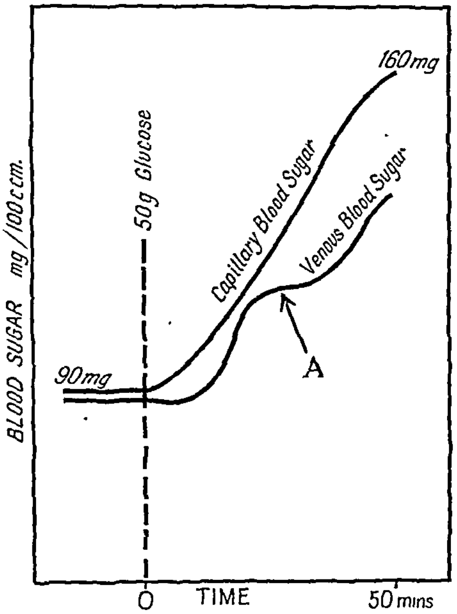
By H. P. Himsworth, M.D., M.R.C.P. Lond.

BEIT MEMORIAL RESEARCH FELLOW

(From the Medical Unit, University College Hospital, London)

The observation that a certain amount of insulin will ensure the retention in the body of a definite amount of carbohydrate is based on experiments with depancreatised. but otherwise normal, animals. But it is a commonplace of clinical medicine that in the diabetic patient insulin appears to vary in efficiency at different times. Thus the supervention of an infection may necessitate a temporary increase in the proportion of insulin to carbohydrate in the diet and the curing of the intercurrent illness may permit a corresponding decrease. Again, it is often found that if a diabetic is taking three meals of identical composition in the day, more insulin is required to prevent glycosuria after the morning meal than after either of the others. A rarer example of this decrease in efficiency is seen in those cases of diabetes which become resistant to insulin even when it is administered in huge doses. Indeed, the now common clinical observation that provided the caloric value of the balanced diabetic's diet is kept constant the carbohydrate may be trebled or quadrupled with little or no increase in the insulin dosage is a clear proof that in the diabetic at least the physiological concept of the glucose equivalent of insulin is not in harmony with clinical observation. A consideration of these and similar observations suggested that the question of variation in insulin activity required deeper analysis.

The problem was first approached through experiments on normal subjects. Results were obtained which proved that by altering the composition of the diet the efficiency of insulin in depressing the blood-sugar could be varied at will, and it was also demonstrated in the same experiments that there was a definite latent period after injection during which the insulin exerted no measurable action. In conjunction with these findings simultaneous blood-sugar curves in arterial and venous blood were performed under the same conditions and in them the phenomenon shown in the diagram was demonstrated. Earlier workers had shown that the degree of difference in sugar content of arterial and venous blood depended upon the amount of insulin present in the body. The sudden increase in the arterio-venous sugar difference at A must, therefore, mean an increase in the concentration of active insulin in the tissues at that point. There are two alternative possibilities. The first, that pancreatic insulin is suddenly secreted at the point A; the second that insulin is being continuously secreted by the pancreas in accordance with variations of blood-sugar. If the first possibility is correct then insulin as secreted by the pancreas is an active substance; if the second alternative holds, then insulin must have continued to be secreted by the pancreas the whole time since glucose was administered and have required the time between the ingestion of sugar and the development of A to acquire detectable activity. From various considerations we have come to the conclusion that insulin is secreted continuously and the time up to point A must represent the time taken for it to develop demonstrable activity. This reaction of activation must develop with increasing velocity and the analogous reaction of the activation of trypsinogen by enterokinase immediately suggests itself. Support is lent to the above interpretation of A by the observation that the interval before it occurred varied in accordance with the capacity of injected insulin to depress the blood-sugar. It was concluded from these results that insulin as we know it and as it is secreted by the pancreas is an inactive material which requires activating by some unknown substance for which we tentatively propose the name of insulin kinase.



Simultaneous blood-sugar curves in arterial and venous blood after administration of 50 g. glucose to a normal subject.

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From a consideration of these findings and our results the suggestion is put forward that insulin-kinase is produced in the liver. This obviously opens up many new possibilities in the pathology of diabetes. The question arises to what extent disease of the liver and the presence or absence of this new factor plays a part in the production of diabetes mellitus. Are there cases of diabetes which are due to disease of the liver and not to disease of the pancreas? Feeding with fat has been found to limit the production of insulin-kinase; does this throw light upon the ætiological relationship of obesity to diabetes? Is the syndrome of abdominal pain, vomiting, and rapid descent into coma with temporary insensitivity to insulin, which supervenes, apparently fortuitously, in balanced diabetics, due to impairment of liver function? And most important of all, can a substance be prepared from the liver which will remedy those conditions in which insulin-kinase appears to be deficient?

The details of the physiological results on normal subjects which have led to the formulation of this hypothesis are now being prepared for publication elsewhere. Work is proceeding on the various pathological questions that arise in the application of the theory to the analysis of diabetes, but evidence from clinical experience cannot soon be collected by one individual with conclusive certainty. This preliminary communication is therefore made in order to interest others in the attempt to regard diabetes and its problems from a new viewpoint.

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OBSERVATIONS ON THROMBO-PHLEBITIS MIGRANS

WITH NOTES OF A CASE

BY ALEC B. WALKER, M.D., M.R.C.P. EDIN.
TUTOR IN CLINICAL MEDICINE, ROYAL INFIRMARY, EDINBURGH

THE type of thrombo-phlebitis first described in 1928 by Moorhead and Abrahamson [1] as thrombo-phlebitis migrans differs from other forms of "wandering" phlebitis in its extensive distribution and in the involvement of peripheral and visceral veins. The disease usually commences in either the superficial or deep peripheral veins with symptoms of inflammation, but later the veins of the lungs, abdomen, or more rarely, of the heart and brain, may be affected. Each fresh development is accompanied with fever and a moderate leucocytosis. The course, though prolonged, is relatively benign and the ætiology obscure.

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Author.	Case	Sex.	Age.	Site of primary phlebitis.	Later sites of phlebitis (in sequence).	Ætiological factors.	Duration of illness.	Laboratory data.
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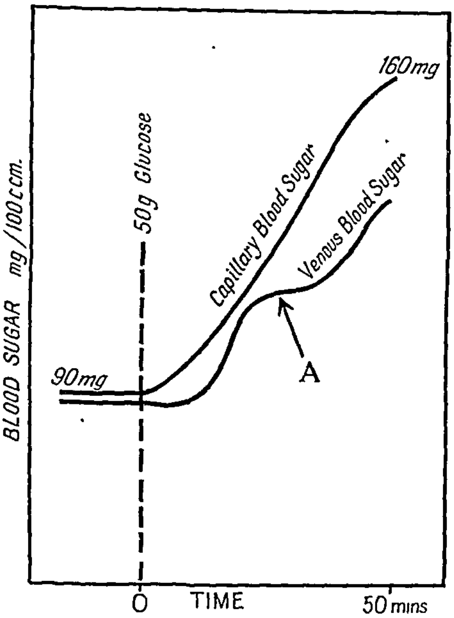

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The case reported above presents the following features. Severe and persistent headache with malaise and pyrexia suggesting venous cerebral thrombosis (see Case 15) and later thrombo-phlebitis of left lung, left leg, right lung, and left lung again, in the order mentioned. The symptoms and signs in the right lung may, however, have been due to an embolus dislodged from left leg by too vigorous massage.

Campbell and Morgan[3] report an unusual case of multiple thrombosis in which the evidence suggests thrombosis affecting the posterior cerebral arteries. Coombs[4] describes a case and mentions others in which there is reason to suspect coronary thrombosis. These though similar in many respects to the cases described by Moorhead and Abrahamson[1] differ in that the arterial tree is also affected by the disease process, and are therefore not included in the Table.

The ætiology is still obscure. It has been sought to associate the condition with influenza, but in no case was a history of such infection obtained. It is more likely that those cases of thrombo-phlebitis *migrans with initial symptoms of cerebral thrombosis* are, in the early stages, diagnosed as influenza in error. The severity and persistence of the head pain in thrombo-phlebitis migrans is of help in making a differential diagnosis.

In Cases 5, 7, 8, 11, and 15 (?) there was reason to suspect the influence of chronic streptococcal focal sepsis, but in the others no evidence to support such a theory was obtained. No specific organism has been isolated, and blood cultures have been consistently negative. There were never signs of septicæmia, and Ryle concludes therefore that "if focal infection is to be regarded as of ætiological importance, the phlebitis must be due to a bacteriæmia rather than a true septicæmia." Cases 13 and 14 followed shortly upon an attack of scarlet fever, but both are atypical in that the thrombo-phlebitis affecting both legs was very extensive, spreading upwards over the abdominal wall and chest. It is questionable whether these two cases, interesting and unusual as they are, ought really to be described as thrombo-phlebitis migrans.

Syphilis also is evidently not a factor. In the above case the ocular phenomena, though not conforming to true Argyll Robertson pupils, suggested the presence of syphilitic infection, but the laboratory findings were all negative.

It is possible that the main ætiological factor is the "soil"—i.e., the condition of the patient—the disease depending on some obscure alteration in the chemico-physical composition of the venous blood (McDonagh[9]).

I have to thank Dr. Comrie for permission to publish the notes of the case.

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DARLINGTON HOSPITAL CHILDREN'S WING.—By the efforts of the Darlington Rotarians, spread over the last two years, a children's wing, which has cost £12,000, has been added to Darlington Memorial Hospital.

THROMBO-PHLEBITIS MIGRANS

BY NORMAN KLETZ, M.B. MANCH., M.R.C.P. LOND.

PHYSICIAN TO ANCOATS HOSPITAL; PHYSICIAN AND HON. PATHOLOGIST TO STOCKPORT INFIRMARY; VISITING PHYSICIAN AND CONSULTING PATHOLOGIST TO PARK HOSPITAL, DAVYHULME

Thrombo-phlebitis migrans is characterised by a thrombo-phlebitis occurring without any pre-existing affection of the veins, without any gross cause, and presenting a tendency to reappear in various situations. It particularly involves the superficial veins of the extremities, but not infrequently there are associated thromboses of veins of the internal viscera. By no means a rarity, it nevertheless seems to be a relatively uncommon affection. The fact of venous thrombosis developing in relation to acute infective and debilitating conditions is too well established to justify any special consideration. The interest of thrombo-phlebitis migrans lies in the peculiar migratory tendency of the recurrent clottings, in the prolonged period over which such clottings occur and the absence of any causative factor. Though the prognosis has been regarded by most writers as uniformly favourable, this is not so. Lipschitz[1] records one fatal case, and in the small series about to be described there was also a fatal issue. Apart, however, from any question of danger to life, thrombo-phlebitis migrans may involve a prolonged period of incapacity and suffering. It is, therefore, worthy of consideration especially from the point of view of possible treatment.

Moorhead and Abrahamson[2] described several cases, and a further series has been published by Ryle.[3] Carmichael Low and Cook[4] also described two cases occurring in Asiatics. Both cases had a history of dysentery and gonorrhœa, but no causal relationship is claimed or suggested by these authors.

So far as the general clinical features of the condition are concerned these are well summed up by Harkavy[5] as follows:—

1. A tendency to involve superficial veins especially of the upper and lower extremities.
2. A decidedly segmental distribution with healthy vein intervening.
3. A progressive spread which is usually accompanied by moderate fever.
4. A lesion having the appearance of an erythematous, fusiform, nodular mass, sensitive to touch; œdema may, or may not, occur.

There is, however, here no mention of thromboses of veins of the internal viscera upon which Moorhead and Abrahamson, and Ryle rightly lay much emphasis. This last author also quotes cases of similar visceral phlebitis described by Campbell and Morgan,[6] and Coombs.[7] A further point of interest is the association of thrombo-phlebitis migrans with thrombo-angiitis obliterans, as recorded by Buerger[8] and many others.

As has been already indicated, the ætiology of this peculiar wandering thrombo-phlebitis is still obscure. Cases occurring in relationship to syphilis, tuberculosis, and gout are described, and references to these are given by Moorhead and Abrahamson, but in the type of case here under discussion no definite causative factor has been adduced. The general features suggest a bacterial cause, presumably blood-borne from some cryptic focus. This is the view put forward by Vaquez and Laconte,[9] and others. Naturally, if this be so, as Ryle points out, the process must be one of bacteriæmia and not septicæmia, in view of the long duration of the illness and the almost invariable recovery. The fact that in no case has a positive blood culture been obtained does not minimise the probable correctness of the suggested mechanism. In a low-grade periodic bacteriæmia culture of the blood is, of necessity, speculative, and could only reasonably be expected to prove positive if it were possible to obtain the blood either immediately prior to or at the exact point of onset of an area of phlebitis. Equally, as any infective factor concerned must be of a low-grade virulence, one would not anticipate any definite leucocytic response. Unless and until it is possible to establish the cause of a thrombo-phlebitis migrans, treatment must, as Ryle frankly puts it, be merely "expectant and symptomatic." In a condition liable, at best, to a prolonged course, and not entirely devoid of risk to life, such a state of affairs is obviously unsatisfactory.

It has, therefore, been thought of value to publish the following cases: firstly, to add to the relatively small number hitherto described, thereby focusing attention upon an interesting clinical condition; secondly, as affording some support to the view of blood-borne infection as the probable cause. Finally, whilst realising to the full the undesirability of making dogmatic deductions as to the efficacy of any therapeutic measure on the basis of a few cases, nevertheless it would appear that certain procedures adopted in certain of these cases had a favourable influence.

CASE REPORTS

CASE 1.—A commercial traveller, aged 30, first seen Dec. 30th, 1927. In 1914 he had some affection of the right ankle-joint which was, for a time, thought to be tuberculous. This joint was ultimately operated upon but not proved to be tuberculous. Served in the army 1918 and 1919. In 1920 he had two attacks of phlebitis in the right calf. After a free period of a year had several recurring areas of phlebitis in the right leg. In 1925 he had several of the thickened areas removed. From this time onwards he had frequent recurrence of areas of phlebitis with "reddening of the skin" in both legs, but more particularly the right.

On examination in December, 1927, general physical examination was negative apart from some infection of the teeth. As part of a general investigation a careful cultural examination was made of nose, throat, urine, fæces, and sputum. There was a copious growth of hæmolytic streptococci from nose and throat. A vaccine was prepared from these organisms and a course of injections was given.

There had been no further recurrence of phlebitis when the patient was last seen in 1930, though some varicosity of the superficial veins had now developed, presumably secondary to repeated venous obstruction.

CASE 2.—Miss A., aged 49. Seen originally August 7th, 1929. During Whitweek in 1929 she started to have pain in the right leg from the knee to the groin, "there was a red ribbon up the leg." This gradually settled, but was followed by a severe pain under the right shoulder-blade with raised temperature but no hæmoptysis. This was diagnosed as pleurisy, though more probably a pulmonary phlebitis. The patient was then in a nursing-home for two months with recurring phlebitis. A full bacteriological examination was made and the blood was cultured. As the outcome of these examinations a vaccine was prepared and administered.

On examination on August 7th, 1929, no active phlebitis was found, but there was slight œdema of the left leg below the knee. As the condition appeared to be quiescent, no special treatment was undertaken. Two months later the patient was seen again. There had been recurring phlebitis of both legs, and at the time of this examination there was active change in the superficial veins of the right leg and enormous œdema of the left as high as Poupart's ligament. The bacteriological possibilities were once more explored without any suggestive result. Teeth and sinuses were, of course, radiographed.

Believing the condition to be of infective origin, and encouraged by the frequent success over a long period of trial of intravenous protein injections in some arthritic cases of probable infective origin, it was considered justifiable to try the same method in this case. Six injections of a *Bacillus coli* vaccine were given intravenously, diluted with saline solution, at intervals of five days, the dose being graduated so as to secure a good general reaction lasting about 10 hours.

The active phlebitis disappeared and no further clottings took place. All went well until March, 1931—a much longer period of freedom than any hitherto—when the patient was seized with severe headache, fever, aphasia and weakness, and incoördination of the right hand. The diagnosis of a cerebral thrombosis due to active phlebitis was made. This attack passed off in about three weeks, though a slight difficulty of speech remained.

In June, 1931, a further cerebral thrombosis occurred with rise of temperature to 102°. This, unfortunately, proved fatal.

Though clearly the condition was not cured, it does appear reasonable to suggest that the intravenous protein injections had a favourable, if temporary, influence on the course of the illness.

CASE 3.—Mr. B., aged 50. Seen in 1930. He had previously been perfectly healthy. Some time before being seen he had been involved in a motor accident, though he had not himself suffered any appreciable physical damage. About a month later he started with small patches of phlebitis in the superficial veins of both legs. This recurred with extreme frequency for two months or so prior to his being seen. No cause was found for it on physical examination, and it was decided to try a course of intravenous protein injections of *B. coli* vaccine. This was done; six doses were given. No further thrombo-phlebitis occurred, nor has there been further trouble.

CASE 4.—Mrs. C., aged about 30. Seen in 1930. This patient had a long gynæcological history with repeated operation but had achieved a successful labour, since when there had been recurring thrombo-phlebitis of the superficial veins of the upper extremities, particularly round the elbows. There was no clinical evidence of any active uterine or pelvic infection.

Bacteriological investigation was carried out and a pure culture of streptococci isolated from the cervix uteri. A vaccine was prepared and given in graduated doses. The phlebitis present settled down and there has been no further trouble.

It might be thought that the relationship to pregnancy and uterine infection does not fulfil the requirements of the condition under consideration, but the migratory features, the unusual involvement of the upper extremities, and the distant low-grade source of infection seem not only to justify inclusion of this case, but also to support the mechanism of causation of thrombo-phlebitis migrans suggested above.

CASE 5.—Mrs. D., aged 52. Seen May 29th, 1930. Has had recurring phlebitis in superficial veins of the legs since February, 1930. No injury or previous acute illness.

On examination patches of thrombosed veins on the inner aspect of both thighs. No evidence of varicose veins. Teeth infected but no other definite abnormality anywhere. This case was fully investigated as to blood count, blood culture, blood calcium, red cell sedimentation rate, coagulation time, &c., without any suggestive result. Full bacteriological investigation was also carried out; no deduction was made from this. The infected teeth were extracted, and as no further clotting had developed, the patient was allowed to go home two months later.

About a year afterwards she was readmitted to hospital with an obvious carcinoma of the stomach. No further phlebitis had occurred since the time of previous admission. No suggestion of possible carcinoma had then been present. In spite of the serious disease subsequently revealed, it seems more probable that dental infection was the cause of the phlebitis.

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CLINICAL AND LABORATORY NOTES

AN ANOMALY OF THE COLON

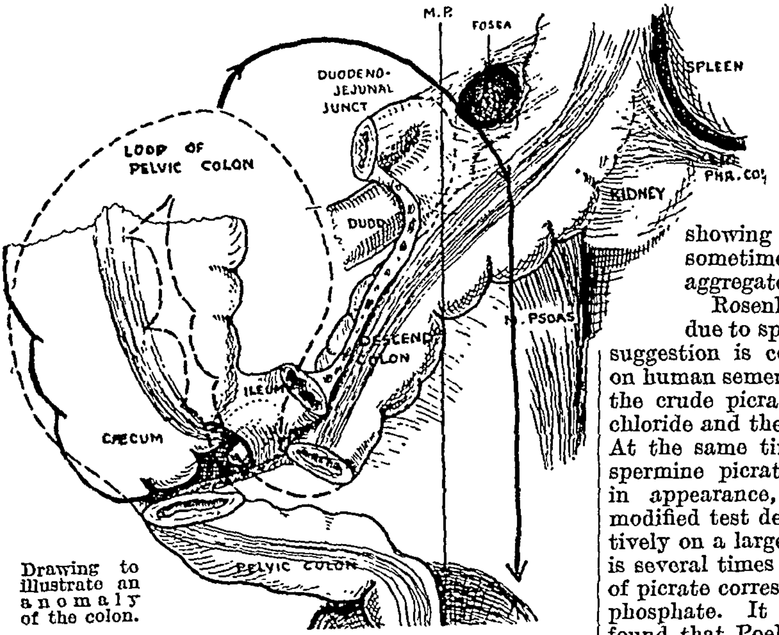
By G. Elliot Smith, M.D. Sydney, F.R.C.P. Lond., F.R.S.

PROFESSOR OF ANATOMY IN THE UNIVERSITY OF LONDON, AT UNIVERSITY COLLEGE

The note by Dr. H. W. Benham on An Unusual Case of Volvulus, in The Lancet of August 13th, prompts me to put on record another case involving gangrene of most of the small intestine and part of the large intestine which came under my notice in 1905. The case impressed me at the time not only because, so far as I could discover, it was unique, but also because it illustrated the practical importance of anomalies of the colon, of which I saw a number of striking illustrations in the course of my work in Egypt. Hence I prepared a careful report of the case, accompanied by a drawing to make clear the remarkable condition which I found. This was posted to England for publication, and I never heard any more of it.

During the summer of 1905, in the absence of the professor of pathology from Egypt, I was performing the post-mortems at the Kasr-el-Ainy Hospital. One evening in the club in Cairo I was struck by the appearance of one of the native Nubian servants who seemed to be desperately ill, and I suggested to the secretary of the club that the man should be sent off. The waiter replied that as he only had another half-hour of duty he would see it through.

On going to the post-mortem room at the hospital next morning I saw this man's corpse on the table, and found on examination a most remarkable state of affairs. He had an excessively long pelvic colon measuring 83 cm. in length, which was only 1 cm. less than the longest recorded case I was able to find at that time. The long loop of pelvic colon had slipped up the right side of the abdomen and then fallen to the left over the root of the mesentery. It was sufficiently long to pass down the left side of the abdomen into the pelvis. This heavy loop of colon, dragging on the mesentery, had led to the strangulation of the blood-vessels in the mesentery, causing gangrene of the greater part of the small intestine below the duodeno-jejunal junction, and it had also compressed the blood-vessels supplying the pelvic colon itself, so that it also was in a gangrenous condition.



Drawing to illustrate an anomaly of the colon.

Having lost the original drawing of this condition, perhaps I may reproduce here, for the purpose of elucidating the causation of the gangrene, a drawing of a peculiar anomaly of the colon which was found by two of my students three years afterwards, and published in the *Journal of Anatomy and Physiology* in 1909. Although in this second case the position of the pelvic colon was quite abnormal, it illustrates how it moved up on the right side of the abdomen to reach the level of the duodeno-jejunal junction. In this drawing I have inserted an arrow to indicate the subsequent course of the displacement which occurred in the fatal case to which I have referred.

A MODIFICATION OF BARBERIO'S TEST FOR HUMAN SEMINAL STAINS

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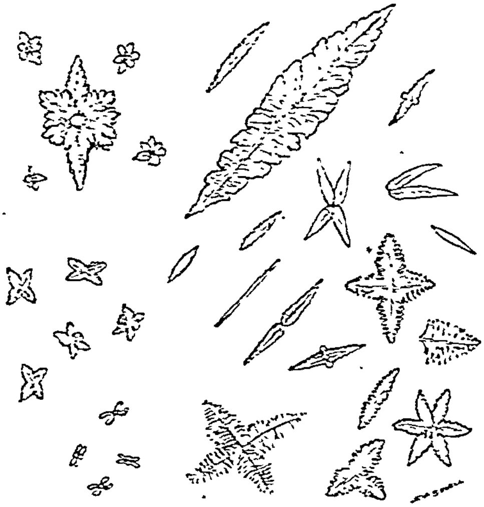
As originally described Barberio's test is performed by adding a saturated aqueous or alcoholic solution of picric acid to an aqueous extract of the seminal stain. After a few minutes the mixture is examined microscopically for the crystals which vary in size (5–20 μ) and shape; these crystals have been described as rhombic needles; as resembling Charcot-Leyden crystals; as ovoid or needle-shaped with rounded ends; as sharp-ended needles; as rhombic prisms often with a refrangent line at their equator; as crosses and stars; or even as small ovoid bodies showing Brownian movement. They are sometimes twinned, and also form drusy aggregates.[1 4 5]

Rosenheim [6] suggested that the crystals were due to spermine picrate. I have shown that this suggestion is correct by performing Barberio's test on human semen on a relatively large scale, separating the crude picrate and converting it into the hydrochloride and then into the characteristic phosphate.[2 3] At the same time the crystals are probably *impure* spermine picrate, first because they vary so much in appearance, and secondly because, when the modified test described below is carried out quantitatively on a larger scale, the weight of picrate crystals is several times greater than the theoretical quantity of picrate corresponding to the final yield of spermine phosphate. It is interesting to note that Barberio found that Poehl's spermine was the only substance that gave picrate crystals resembling those obtained from human semen. But he observed that after heating Poehl's spermine to 100° F. for one and a half hours no crystals were obtained with picric acid, whereas dried semen would stand a temperature of 150°F. (but not of 200°) for one hour and still give a positive reaction. In view of Rosenheim's observation that the commercial material sperminum Poehl contained only traces of spermine, these experiments on the effect of heat are of no importance.

The obvious disadvantages of the test as originally described are that a search has to be made for crystals in a mass of amorphous precipitate of protein, and that the conditions for carrying out the reaction are not well defined. I believe that these disadvantages have largely been overcome in the modified method.



Composite drawing under the microscope of crystals of impure spermine picrate obtained in modified Barberio's tests.

THE MODIFIED TEST

The seminal stain is extracted with trichloracetic acid which removes spermine and other substances, but leaves behind the proteins. The cleared extract is precipitated with picric acid, and the crude spermine picrate is crystallized under conditions determined by experiment. The details are as follows:—

A portion of the cloth about 1 × 1 cm. is cut out from the stain and pushed to the bottom of a tapered centrifuge tube; 1 c.cm. of 2·5 per cent. trichloracetic acid is added, and the tube is shaken at intervals. After standing for about one hour the tube is centrifuged, and the supernatant fluid is decanted. This fluid is generally clear, but may be slightly opalescent. An equal volume of a saturated aqueous solution of picric acid is added, when a precipitate forms if spermine is present. Certain other substances, however, may also give a precipitate (amorphous), so that the appearance of a precipitate does not necessarily mean that the reaction is positive. The mixture is placed in a boiling water-bath for a few minutes till solution is complete. The flame is turned out, and the tube is left to cool slowly in the bath. When cool the contents of the tube are centrifuged if necessary, and the precipitate is examined under the microscope. If crystals are observed the reaction is positive, but amorphous particles are of no significance. If a relatively *copious* precipitate is obtained which is amorphous, it may be due to the concentration of spermine picrate being relatively high. In that case the contents of the tube are diluted with one or more volumes of a mixture of equal parts of 2·5 per cent. trichloracetic acid and saturated picric acid (but *not* with water), heated and cooled as before. This, however, is rarely necessary if the test is carried out as described.

The yellow crystals vary considerably in size and shape. They may be acicular, either single or as crosses or in stars, or they may be lenticular, often with a refrangent line at their long axis, and resembling spermine phosphate crystals morphologically. Quite frequently these crystals have an irregular outline; there may be a single bulge at the centre, or the whole crystal may have a "feathery" appearance; they may be twinned. Some of the forms observed are illustrated in the Figure.

CONTROL TESTS

The reaction has been applied to cloth stained with the following substances: human whole blood, oxalated plasma, serum, urine, fæces, sputum, pus (staphylococcal, pneumococcal, and pus from a pancreatic cyst), and cow's milk. Some of the samples of pus gave a slight amorphous precipitate, but no crystals. All the other materials gave no precipitate and no crystals. The nasal discharge on used handkerchiefs also gave negative results, as did a solution of tribasic calcium phosphate in 2·5 per cent. trichloracetic acid.

DISCUSSION

I believe that in the past negative results may sometimes have been obtained with Barberio's test owing to ignorance of the fact that too concentrated an extract of a seminal stain may give an amorphous precipitate.

Obviously the time allowed for extraction of the stained cloth will influence the concentration of spermine in the final extract. This factor has been checked by putting up a known volume of semen, dried on linen, in 10 volumes of 2·5 per cent. trichloracetic acid, taking out one volume at different intervals of time and carrying out the prescribed test. At first (ten minutes to one hour) good crystals were obtained, but after one hour the precipitate was amorphous. When the tubes containing the amorphous precipitate were suitably diluted with a mixture of equal parts of 2·5 per cent. trichloracetic acid and saturated picric acid (dilution with water was unsuccessful), heated and cooled as before, a crystalline picrate was obtained.

Clearly, the quantity of semen in a seminal stain is unknown. Moreover, the type of cloth may influence the rate of extraction by the trichloracetic acid, and again the concentration of spermine in the semen of different individuals certainly varies. These and other factors cannot be controlled properly, but I am of the opinion that the modified test is a distinct improvement on the original test, and that it is likely to yield a higher percentage of positive results with true seminal stains. There must still be an element of doubt when dealing with an unknown stain as to whether a negative result can be regarded as reasonable proof of the absence of semen from that stain, but at the time of writing false positive and false negative results have not been encountered in examining stains of known origin.

I am indebted to the Medical Research Council for a grant towards the expenses of this work.

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CEREBELLAR SYNDROME AND NYSTAGMUS IN MIGRAINE

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A MAN who had always enjoyed good health began at the age of 28 to suffer from attacks of giddiness. At first these were mild, each lasting for perhaps not more than a minute; they recurred, however, several times a day. There might be no attacks for three or four days, but sometimes they would persist for several successive days. They gradually became more frequent and longer in duration, and, about a month after the onset of the trouble, the giddiness became associated with headache setting in a few minutes after the vertigo was experienced. The clavus—a severe shooting pain—was habitually to the outer side of the right orbit and spread mainly upwards to the right frontal, and outwards and backwards to the right temporal regions. Occasionally, in very severe attacks, it would extend as far back as the right occipital region, but the left side of the head was never affected.

These attacks of hemicrania, especially when severe, were often accompanied by diplopia, and at the beginning of each attack other visual disturbances were almost constantly present, although variable in degree.

The fully developed teichopsia were spontaneously described by the patient as follows: "Blackness comes in from each side, yet I can read print. Looking up, a very bright light surrounded by darkness appears, and, after a few seconds, oscillates up and down. It disappears suddenly, the brightness in the centre becoming replaced by blackness, leaving a ring of light." A few seconds after the onset reading was impossible. On inquiry it appeared that nothing suggestive of castellation figures or of fortification spectra were observed, but black non-scintillating scotomata were frequently seen. In addition, "floating bubbles of light, dodging in and out," scintillating and appearing chiefly in the upper half of the visual field, were seen, not only during, but also, in bright daylight, between the attacks.

The attacks steadily increased in severity, lasting half an hour to several hours in the daytime, and, if unrelieved by the evening, only ceasing on going to bed. Six months after the onset of his symptoms he began to experience a feeling of falling forwards whenever he stooped, but he never actually fell. From the beginning of his illness he had frequently experienced trembling in his left leg, and now he began to have a feeling of stiffness in that limb, and later, cramp followed by weakness persisting for some weeks at a time. Although he could not recall anything which suggested a precise relationship between these attacks of weakness and the attacks of migraine, it would seem that they were of the nature of the hemiplegic or monoplegic periodic palsies which very occasionally occur in migraine.[1]

Nine months after the commencement, his symptoms had become so severe that he was obliged to give up work. No improvement occurred, and three months later he came under the care of the medical unit at Cardiff.

Usually he felt depressed for a day or so before an attack, markedly so before a very severe one, and in this way he became aware that an attack was impending. He felt sick during almost every attack but vomited on two occasions only, and then the headache was unusually severe; it is noteworthy that the headache was thereby relieved. The patient stated that the attacks were more frequent and more violent when he was tired or worried, or after he had been reading or taking beer. He found that all his symptoms were aggravated by the erect posture and relieved by lying down, and especially by sleep. He did not suffer from any disturbance of appetite or from any unusual constipation.

The above twelve months' history is one typical of migraine. The patient, although he had always been fairly healthy, was of a very nervous disposition, and tended to worry excessively over small matters. Slight deafness in both ears had followed several severe "colds" about six years before the onset of his migraine. For the two years preceding the beginning of the illness, his occupation had exposed him to considerable damp, and during this period the joints of the little finger of each hand became chronically swollen, painful, and stiff. In this connexion it is interesting to recall that an association between various joint conditions and migraine has frequently been pointed out. Gowers[2] stated that a family history of gout was rarely absent in the worst cases; Jones[3] found that migraine had, for years in some cases, been present before the appearance of rheumatoid arthritis, while Hughlings Jackson[4] called attention to the existence of a close connexion between migraine, chorea, and rheumatism, and particularly to its more frequent association with chorea rather than rheumatism without chorea, in that chorea indicates cerebral involvement.

On inquiring into the patient's family history, it was found that a maternal aunt was a sufferer from attacks of typical migraine, with hemicrania ending in vomiting, and relieved only by sleep. His mother, too, had suffered for many years from severe headaches, although not hemicranial, and not associated with nausea or vertigo. One sister had died of chorea.

The patient was found to be well-built, well-nourished, and mentally alert, with arteries a trifle thickened for his age, and a systolic blood pressure of 145 mm. Hg. The thoracic and abdominal viscera showed nothing of note, and his Wassermann reaction proved to be negative. The deep and superficial reflexes were all normal, and no sensory loss of any kind, superficial, deep, joint, or vibration, could be detected.

He stated that at times his left arm got easily tired and felt weak, but examination never detected any muscular weakness in either the arms or the legs. This again was possibly of the nature of the monoplegic attacks to which reference has already been made. During the attacks of migraine, walking was practically impossible. If he attempted to do so, he would hold his head with both hands, and, leaning forwards, would stagger about in an alarming fashion. Even standing was extremely difficult on account of the giddiness. Between the attacks, however, the gait was normal, no peculiarity of attitude persisted, there was no Rombergism, and no incoördination could be detected in the arms. There was no evidence of hypotonia, no dysdiadochokinesia, and no defects in speech.

Eye signs, however, were most conspicuous. The pupils were normal, but nystagmus was particularly prominent, very persistent, and obvious even on a casual glance at the patient. He himself was aware of the eye movements and remarked that he could "put up with the headaches and giddiness if only his eyes would keep still." The nystagmus was chiefly lateral, and consisted of quick fine jerks, rather more marked and rapid on looking to the left than to the right, and at times increased in rapidity until the movement became almost a tremor. There was neither blepharospasm nor intolerance of light. In the absence of headache the nystagmus was much less marked, and then was usually only evident on looking to the left.

In addition to the nystagmus, transient ophthalmoplegia was a feature of the case, and the duration of the individual palsy seemed to bear some relation to the severity of the migrainous attack which preceded it. When first seen there was definite weakness of the right external rectus, with diplopia on looking to the extreme right, and there was also diplopia on looking upwards to the left. A few days later these signs had disappeared, and for over a month there was no diplopia or obvious squint. One of the worst attacks the patient had ever experienced then set in and diplopia appeared in the lower half of the visual field, particularly on looking downwards. On looking to the extreme left, the right eye would rotate in an anti-clockwise direction through about 20° and a temporary squint resulted, suggesting possibly some paresis of the fourth cranial nerve. As this occurred the nystagmus seemed to be aggravated for a few seconds and showed some rotatory movements. The patient remarked that his eyes were always wobbling when he looked to the left. While he was under observation, several transient palsies of the right external rectus occurred, but no involvement of the left eye was ever noticed.

Ophthalmoplegia is a well-known if infrequent event in migraine, but the other features of the case are, of course, rare. The attacks were accompanied by signs which would appear to be of cerebellar origin. I know of only two comparable cases in the literature. Oppenheim[5] described a single case which came under his observation:—

> "Each attack of migraine commenced with typical cerebellar symptoms. During the attack, standing and walking were very uncertain; the patient swayed like a drunken man, had severe vertigo, and a feeling as if his body or some portion of it were doubled up. The impairment of balance appeared and disappeared with each attack. The case might have been called '*hemicrania cerebellaris.*'"

The other case, recorded by Siebert,[6] showed a complete cerebellar syndrome with nystagmus in a single attack of migraine.

His patient, a woman of 47, had suffered for many years up to the menopause at the age of 44, from severe attacks of typical ordinary migraine, unaccompanied by any cerebellar symptoms. Then during a single day after three years of good health, a very severe isolated attack occurred. manifested by left-sided hemicrania. vertigo. ataxy on walking or standing but no incoördination on lying down. and nystagmus. The latter was very marked on looking to the right, and there was a tendency for the eyeballs to rotate on looking downwards and outwards. Three years later, when the case was reported. no evidence of organic disease had been discovered. there had been no further attack of migraine, no cerebellar symptoms, and the patient remained perfectly well.

The symptoms in the case now recorded were similar to, although much more persistent than, those of Siebert's patient. Cerebellar signs were present with each attack, and nystagmus was a specially noticeable feature. The proper assessment of the latter had to be considered very carefully in view of the fact that the patient had been a coal-miner for the preceding 14 years, working for the first four at the coal-face and the remaining ten as a haulier. As the result of very careful investigation, it was concluded that the nystagmus was not occupational. The classical features of miners' nystagmus include [7] delayed dark adaptation, movements of lights in the dark, headache and giddiness, blepharospasm and intolerance of light, together with nystagmus which is essentially rotatory. In the case under discussion the nystagmus was lateral, there was no blepharospasm or intolerance of light, and no failure in dark adaptation. In view of the importance and complexity of the case, it was thought wise to obtain the opinion of one with special knowledge of nystagmus in miners, and for this purpose Mr. Tudor Thomas, the ophthalmologist, was asked to examine the patient soon after he came under our care. He kindly gave the following report:—

> "The fundi are normal; no definite diplopia to-day. There is nystagmus on looking to either side. The nystagmus consists of quick fine jerks, and is a little more marked on looking to the left side. At times the movement becomes much more rapid—like a tremor. No typical oscillations of the eyes as in miners' nystagmus found; none on stooping, nor after shaking the head, &c., nor after stooping. No intolerance of light. No blepharospasm. Therefore the diagnosis of miners' nystagmus cannot be made."

When first seen the patient was put on bromide of potassium. His general condition improved, and he became less nervous and worried, trembling disappeared from his left leg, but the actual migraine was very little affected. He was then put on the classical prescription: sodii brom. grs. 10, liq. strychn. ♏4, liq. trinitrini ♏1, acid. hydrobrom. dil. ♏10, aq. ad. ½ fl. oz., t.d.s., and within a month definite improvement was noted. Headache became much less severe, nystagmus disappeared almost entirely, being demonstrable only on looking to the left and then very slight, diplopia became very infrequent, and teichopsia appeared on only one or two occasions. When after four months of this treatment he was seen again, he felt well and was anxious to resume work. He had had several attacks of migraine in this period, but they were much less severe and frequent than before the commencement of the treatment. Nine months after this he had been free from attacks except for two weeks following a period of a month without the medicine, nystagmus had disappeared, and there was no evidence of ocular paresis.

I have to thank the director of the medical unit, Prof. A. M. Kennedy, for much helpful discussion concerning this case.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

At a meeting of this section on Oct. 21st, with Mr. J. P. Hedley in the chair, a discussion on the

Indications for and against Cæsarean Section

was opened by Dame Louise McIlroy. Cæsarean section, she said, was an artificial method of delivery much favoured by young surgeons and obstetricians. Pelvic contraction was the commonest indication for the operation, but in those cases where the degree of contraction was mild much could be learned from a trial labour. Many delivered themselves spontaneously. Trial labour had diminished the rate of Cæsarean sections, but it was not suitable for domestic practice. The dark horse of obstetrics was the case in which the pelvic brim was normal but the outlet contracted. By the time it had become apparent that spontaneous delivery could not occur it was too late to perform Cæsarean section. In asymmetrical pelvis trial labour was valuable; if the head entered the wide diameter of the pelvis normal delivery would occur, and if not, section could be performed. She also performed the operation in cases of breech with extended legs where attempts at version had failed, and in cases of persistent transverse presentation. Occipito-posterior presentations usually rotated spontaneously; but it was too late to perform section by the time it became apparent that rotation was not going to occur. In severe cases of ante-partum hæmorrhage where bleeding was concealed, Cæsarean section was possibly the only treatment, and certain cases of central placenta prævia were best treated in this way; shock to the mother from severe bleeding, and prematurity of the fœtus were contra-indications. Section could sometimes be performed for prolapse of the cord, but the operation must be carried out quickly if the child was to survive. Good results were obtained with patients suffering from heart disease by prolonged rest during pregnancy. and sedatives and anæsthesia during labour. Where labour was likely to be obstructed by a fibroid, Cæsarean section and myomectomy could be performed at term. She preferred to operate on ovarian cysts during pregnancy owing to danger of torsion of the pedicle. Eclampsia was only rarely an indication for section, but rigid cervix might require this treatment; amputation of the cervix sometimes left a scarred stump which failed to dilate at all. She asked whether the meeting considered a recent operation for prolapse a sufficient justification for performing Cæsarean section. She preferred to perform the operation after the onset of labour for three reasons: it was possible to be fairly certain that the child was not premature; if trial labour was employed spontaneous delivery might occur; the uterus contracted down and drained well afterwards. She had recently been using stovaine anæsthesia with success.

Mr. L. Carnac Rivett did not agree that the been acquired through residence in the endemic area. There was no doubt that, particularly under African conditions, adults were more frequently affected by the disease than children. But on the Demerara Dr. Giglioli found that children were three times as liable to blackwater fever as adults, and the morbidity was highest in the first decade of life, and was low after the twentieth year.

The recurrence of blackwater fever in certain families and houses was a striking characteristic of the epidemiology of the disease in this region. Of 63 cases, 22 originated from only nine families. Yet no local conditions had been traced which might render these particular houses more unhealthy or more malarious than a hundred others in the same neighbourhood; nor were the families attacked those who were more seriously harassed by chronic malaria. Dr. Giglioli held that the recognition of a house infection leading to blackwater fever implied that certain strains of malarial parasites transmitted at the same time or in succession to different subjects had the property of repeatedly producing blackwater syndromes. He argued that the disease must therefore be regarded as specifically related to such strains of plasmodium as could be considered to be biological varieties of the commonly known parasites, especially the estivo-autumnal species, which he referred to as hæmolytic strains. In most cases of blackwater fever no parasites were found and no definite precipitating factor could be determined; in others, unusual exertion, exposure to rain or sun, or alcoholic excess seemed related to the onset. The mixed settled population showed the least degree of immunity, but also the lowest mortality. The race immunity of negroes was remarkable, but if a negro acquired the disease the issue was more likely to be fatal. The action of quinine as a precipitating factor in a blackwater fever attack had been observed by all who had made a wide study of the disease; some, indeed, had described blackwater fever as a toxic syndrome specifically related to quinine. Nocht and Kikuth had found experimentally that quinine in vivo favoured hæmolysis and hæmoglobinuria.

Dr. Giglioli's studies had led him to the following conclusions: (1) That blackwater fever was the direct result of infection with special hæmolytic strains or biological varieties of the plasmodium. (2) That the epidemiology of blackwater fever was governed by the geographical and local distribution of such strains and the degree of immunity of the population. (3) That immunity to blackwater fever presented the same characteristics as immunity to malaria. (4) In individuals infected with hæmolytic strains the onset of hæmoglobinuria could be determined by special virulence of the infecting strain, by the absence of immunity and impairment of general non-specific resistance, by contingent factors tending to break down the immunity, and by quinine.

CLINICAL ASPECTS OF LONDON CASES

Dr. P. H. Manson-Bahr discussed the clinical aspects of some 20 cases of blackwater fever which had been under his care in London between 1919 and 1932; 16 of these were treated in the Hospital for Tropical Diseases. Only four of the cases occurred in women. In five the blackwater fever manifested itself while the patients were in bed being treated for subtertian malaria; it came "as a bolt from the blue," no previous blackwater stage having been ascertainable. In half the cases the attack began one to seven days after the arrival of the patients in this country; one, however, did not develop the disease until five and a half months after entering the country. The mortality-rate of this London series of cases was high, 40 per cent., the death-rate in the Central African colonies and dependencies being about 25 per cent. Two of the deaths were due to sequelæ, one to septicæmia, one to a boil on the nose while recovering from the blackwater fever, one to pneumonia, the other six to the hæmolysis of blackwater fever. The dramatic intensity of some of the cases was well illustrated by that of a lady who two days before attack arrived from Nigeria. She accompanied her husband to a theatre, and arriving back at her hotel at 11 P.M. felt well. Then she had a rigor, passed black water, was brought to hospital at 2 A.M. the next morning, and 12 hours later she was dead. Most of the cases came from West Africa, but some from Northern Rhodesia, Kenya, British Guiana, and Trinidad. The administration of quinine seemed to be definitely connected with the onset of blackwater fever. The disease was liable to occur in any patient infected with subtertian malaria after arrival in England, as long as the parasite remained active in his blood. Subtertian parasites were demonstrated in the blood of more than half of the London cases. A possible sequel of blackwater fever was cholelithiasis. As to treatment, Dr. Manson-Bahr recommended sodium bicarbonate intravenously with glucose, and blood transfusion.

Dr. N. Hamilton Fairley gave an account, jointly with Dr. R. J. Bromfield, of his laboratory studies made under a grant from the Colonial Office. They had demonstrated the presence of methæmoglobin and oxyhæmoglobin in the blood of subjects of blackwater fever, and said that the determination of the bilirubin and blood-urea was of value in prognosis. The cholesterol content of the blood was low, but when the kidneys were involved the quantity tended to rise. During the first 48 hours of the disease the blood pressure tended to be very low.

Dr. N. Fletcher showed by means of microphotographs the necrosis in the centre of the liver nodules associated with this disease. He had found that Asiatics afflicted with the disease had a low mortality, and he held that alcohol was useful in treatment.

Sir Samuel Christophers did not agree with the importance placed on hæmolytic strains of malaria parasites in the ætiology of blackwater fever. He was convinced that there was a time factor in the causation of blackwater fever, and that length of residence was important. The disease could be acquired after only three months' residence, but ordinarily it was not experienced under two years. In the bodies of blackwater fever patients some change seemed to have been produced by the parasites.

THE QUESTION OF HÆMOGLOBINÆMIA

Prof. Warrington Yorke considered it necessary to get to know more about the mechanism of this disease. Scarcely any worker on the subject had thoroughly investigated the question of hæmoglobinæmia; in this disease there was a small but definite degree of hæmoglobinuria. His own feeling was that the hæmolysis which occurred might be in the spleen and certain other organs which were rich in reticulum. Possibly some hæmoglobinæmia might be caused by proliferation of epithelium resulting from antecedent malaria. He did not think it reasonable to hope for improvement in treatment until more was known about the disease.

Dr. J. W. McNee said that in this disease we were concerned not with the activity of the reticulo-endothelial system, but rather with the great rapidity with which hæmoglobin appeared in the urine. He had found surprisingly little change in the liver and spleen in some of the London cases which he had investigated. Cases of blackwater fever bore a strong clinical resemblance to those seen during the war, in which transfusion was carried out with incompatible blood. These latter cases had perfringens infection at the same time.

Dr. J. H. COOK spoke of the difficulty of getting sufficient fluid into these patients because of their almost incessant vomiting; beer seemed to be kept down well by a number of them. He agreed with Dr. Manson-Bahr on the efficacy of intravenous injection of sodium bicarbonate (grs. 150 to the pint of water) supplemented by glucose. It was most important to prevent the onset of a chill in these patients.

Dr. H. S. STANNUS also agreed, but called attention to the treatment of blackwater fever by native beer in Africa. British cases should be given good ale.

Dr. TOM JAYS described his own attacks of blackwater fever, in the first of which, when he was alone and before he graduated, he took grs. 8 of calomel and grs. 100 of quinine a day for four days, then diminished the dose. He realised the great importance of conserving the heart's energy.

MEDICAL SOCIETY OF LONDON

AT the meeting on Oct. 24th, with the President, Sir JOHN BROADBENT, in the chair, a discussion was held on

Fractures of the Lower Jaw

Mr. W. WARWICK JAMES said changed conditions of traffic on the roads had led to greater frequency of fractures of the lower jaw and to more severe lesions. Jaw injuries had thus acquired greater significance in civil practice, but most of our knowledge was derived from experience in the war. His remarks were based on the results of four years' work at the Third London General Hospital. The underlying principles of treatment of those cases differed according to whether the fracture was of the body, involving the teeth sockets, or of the bone beyond the tooth-bearing area. The two groups differed considerably: the fracture was usually compound in the first, but very rarely in the second group, and these fractures of the bone beyond the tooth-bearing area bore a close resemblance to fractures of other bones. In an edentulous patient the conditions were altered, as the body of an edentulous jaw was not easily fractured. In some special conditions associated with the atrophied mandible of old age—malignant growth, extensive necrosis, and tabes—only a small force sufficed to cause fracture, generally of the molar region. Most of the fractures of the mandible, both in military and civil cases, occurred in young adults whose teeth were present. In children fracture of the mandible was not common; when it occurred a fall was usually the cause. Fracture of the front of the mouth was usually at or near the site of the blow; a fracture at the back of the mouth was usually the result of an indirect force. Displacement of a simple fracture in the front of the mouth was often a direct result of the injury, but displacement through muscular action was a more important factor, especially in multiple fractures.

The severity of fractures varied from the simple type, with little displacement, to those with much comminution, or with loss of both hard and soft tissue. Of the possible complications, dislocation of the condyle could easily be overlooked, while fracture of the maxilla and other injuries might add considerably to the difficulties of treatment. The commonest sites of fracture were in the region of the canine tooth, in the molar region, and through the neck of the condyle; it was unusual for the neck of the condyle to escape in multiple fractures.

Diagnosis.—Displacement was usually obvious, as was also impairment of function. Hæmorrhage from the torn muco-periosteum could be seen, and ecchymosis in the floor of the mouth was a valuable sign, while X rays gave conclusive evidence. Fracture of the condyle was associated with displacement of the mandible to the side of the fracture. The most distressing symptom associated with fractured mandible was the pain on movement of the fragments; and in these cases the mouth was always open, with the saliva dribbling out, the head being held very rigid. Movement of the tongue caused pain, and hence the patient swallowed as little as possible, and mouth and pharynx became fouled by debris. Early in the war when these cases remained untreated for days they became septic and offensive, many deaths occurring through inability to cough and the onset of septic pneumonia.

Treatment must consist of cleaning up the mouth and removing the fragments in such a manner as not to cause pain. In fractures involving the alveolar process, carrying teeth, there was a continuity of living tissue throughout the mandible; it was a grave error to regard the teeth as separate entities like nails in a board, and to ignore them and their sockets. Usually the line of fracture was oblique, passing between two teeth, and it was always compound. Necrosis seldom occurred if the fragments were at once brought into fairly accurate apposition. Should suppuration occur in the soft tissues, drainage at the most dependent part would mostly prevent the necrosis from becoming extensive. Mr. James considered that removal of a tooth was justified only if it interfered with the restoration of the fragments, or caused acute intractable pain. A frequent site of necrosis was the socket from which a tooth had been removed; often it was found that teeth which at first were condemned as hopeless became, if left in the mouth, of considerable functional value. A compound fracture of the jaw was less serious than a compound fracture of other bones, possibly because of the constant washing of the wound by saliva. In neglected cases notwithstanding necrosis might be extensive, especially if much pain was present, because pain led to great restriction of tongue movements. Even fragments of bone should be retained and restored to the positions they normally occupied unless actually detached; the periosteum might be intact, and new bone might be formed by the osteoblasts present. An external incision at an early stage might do much to prevent destruction of tissues. The treatment of fractures of the mandible consisted of two stages: restoration of the fragments to their normal position, and the maintenance of them there. Pain must be relieved, and the related soft parts stitched up to maintain the correct line of the mouth while avoiding tension. Suppuration called for drainage through an external incision. The displacement might be so slight that a four-tail bandage might suffice, but a carefully adjusted simple splint was better. A general anæsthetic should be given, and mostly the best result was obtained by wiring the teeth of the mandible to those of the maxilla, the muscles being then placed in a natural position of rest. A difficult complication was dislocation of the condyle, which might pass unrecognised. It was better to wait for radiograms before operating for this condition. Sometimes the rate of recovery was remarkable. Some patients were walking about in four or five days, and function was quite restored in eight weeks.

COMPLICATIONS

Sir **Harold Gillies** said that the chief complications which might occur in fractured mandible were: non-union, mal-union, delayed union, loss of bone substance, the obliteration of the buccal sulcus, and facial deformities. A surgeon called to a case of fractured mandible should at once call in a dental surgeon. Sir Harold much preferred a cap splint to wiring; the former was rigid, kept the whole jaw together, and could be fixed without an anæsthetic. When one tooth was present in the middle of a fragment, a cap splint would hold it in excellent position. In cases of mal-union of the mandible in which the fragments had not been properly controlled, the surgeon should be bold enough to undo the mal-union and reunite the fragments in good position, with or without a bone graft. In many cases of deformity resulting from mal-union of a fractured jaw the appearance could be improved by a buccal inlay, especially when a piece of bone was missing from the middle of the jaw. Delayed union and non-union were the same in the mandible as in other bones; but it was necessary to point out that teeth should not be left in necrosed bone, and that the interposition of a foreign body, such as a plate or a wire, must be condemned. He wished to correct any impression that teeth which were in the line of fracture should be left; to leave a tooth which showed signs of absorption round the roots in the line of fracture was an invitation for further necrosis and more delay in union, even for non-union. If a jaw was much comminuted and pieces of bone could only be controlled by utilising a tooth—i.e., in the line of fracture—it should only be utilised for long enough to keep the bones in position. He regarded surgical wiring of a mandible as bad practice, and plates equally so. All pieces of loose bone and fragments between the ends of the bones should be removed, as well as any tooth. Cases in which there had been much loss of bone substance, leaving a space of more than half an inch, should be treated ab initio with the idea that a bone graft was necessary.

Mr. **Percival Cole** said that for the 1300 cases of fractured mandible, which had come under his care during the war, 738 more or less major operations were performed. He supported Sir Harold Gillies's advocacy of the cap splint as against the wiring of teeth. The indiscriminate extraction of teeth in these cases could not be defended, but to conserve an obviously useless tooth was not wise.

Mr. **Zachary Cope** insisted on the need for collaboration between surgeon and dentist in these cases. Diagnosis was not always easy, and after a fracture had been sustained in civil life—usually after a boxing bout—it was apt to be overlooked by the subject, who probably attended at hospital later with a swelling. During the war he had dealt successfully with large gaps by bone grafts, some almost 3 in. across. He preferred catgut to wire.

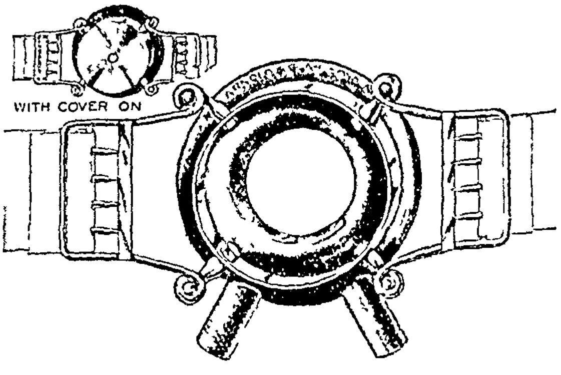
Mr. E. D. **Davis** said that in the early part of the war when a case of face or jaw injury came in, a huge dressing was applied and the patient was hurrie to the base. Later that routine was abandoned and the deformity was first reduced, the case cleane up as well as possible, and an attempt made t put the fragments into good apposition. Absolutel rigid fixation was not necessary, for union occurre even if there was slight movement between the fragments; the fixation, however, must be sufficien to prevent displacement deformity. A few of th cases died suddenly, and were found to have fractured base.

Mr. A. H. **McIndoe** said that in his experience fractures through the mental foramen were frequently associated with fractures through the opposite angle, and the latter could easily be missed. The four-tail bandage was an inefficient method of fixation. Sepsis alone did not cause delayed union, but sepsis in the presence of a foreign body was a very important factor. He agreed that the presence of roots of teeth in the fracture line was a potential source of chronic infection.

NEW INVENTIONS

SUPRAPUBIC DRAINAGE-BOX

Since introducing the sponge-rubber pad attachment for a Hamilton-Irvine suprapubic box, I have endeavoured to modify the apparatus so as to make it simpler and lighter. Mr. J. Alban Andrews has also been working with the same object in view, and I am indebted to him for some of the principles incorporated in the new apparatus. It consists of a round, instead of an oval, pad, which has the advantage of lying in better apposition on the patient, especially in thin subjects. The rubber tubes are fitted with "D"-shaped metal linings giving a better surface for contact, and are more comfortable than the round type. The rubber flange is made of thicker rubber, and is placed at right angles to its position in the original pad. On the outer and inner surfaces of the flange are two metal rings, half an inch in height, kept in position by four bolts passing through the rubber flange, and are prolonged externally to act as hooks for the buckles attached to an elastic webbing belt which keeps the apparatus in position (see illustration). These buckles are made of metal and are easily kept clean. I have found the new apparatus to be an improvement on the old one, both as regards being more comfortable for the patient and also for keeping him dry.



The apparatus is made by Messrs. Arnold and Sons (John Bell and Croyden), 50–52, Wigmore-street, London, W.

Frank Harvey, F.R.C.S. Edin., M.R.C.S. Eng.

REVIEWS AND NOTICES OF BOOKS

Heart Disease

Principles of Diagnosis and Treatment. By CRIGHTON BRAMWELL, M.A., M.D., F.R.C.P., Assistant Physician to the Manchester Royal Infirmary; Consulting Physician for Women to the St. Mary's Hospitals, Manchester. London: Edward Arnold and Co. 1932. Pp. 244. 12*s.* 6*d.*

Dr. Crighton Bramwell has written a book which deals essentially with the cardiac problems met in the clinic, in the consulting room, and at the bedside. The work is based on a series of lectures forming part of a systematic course in medicine. These have been assembled into a consecutive story and although, as is stated in the preface, many aspects of the subject have not been included, all important general principles are considered. We are spared the orthodox introductory chapters on the anatomy and physiology of the cardiovascular system; the reader will be grateful that he does not have to wade through the formidable preliminary chapters which tradition seems to demand and which therefore can be found in most text-books on heart disease.

The book is divided into seven sections. The introduction deals with general principles, case-taking, imaginary heart disease, and the athlete's heart; the last-named chapter is of particular interest as it summarises the considerable literature which has grown up round this subject and includes the results of some personal observations made in 1928 on Olympic athletes at Amsterdam. The next section discusses heart failure; several pages are devoted to the chemistry of dyspnœa and cyanosis, an aspect of these conditions frequently neglected. Another important problem, whose discussion often falls between two stools, those being books on obstetrics and books on cardiology, is here fully discussed—viz., heart disease in pregnancy. Section III. on the cardiac mechanism will be welcomed by those who look on electrocardiography as a closed book; in the short space of 42 pages a clear description is given of rather more than the rudiments of what is well described as "the written language of the heart." Section IV. sets out the essentials of structural lesions. The few pages devoted to the technique of X ray examination of the heart are illustrated by some excellent radiograms. Section V. treats of cardiac intoxications, Section VI. of blood pressure and prognosis; this last includes an interesting section on anoxæmia and oxygen therapy, the different types of anoxæmia being considered from the aspect of whether or not they respond to the administration of oxygen. The subject matter throughout is illuminated with apt diagrams as well as with electrocardiographic records and radiograms. This book should be read by specialist and practitioner alike. That its size is small is due to the author's wise economy of words, and to his omission of unnecessary details.

It is a first-class work.

Medicine

Essentials for Practitioners and Students. By G. E. BEAUMONT, D.M., F.R.C.P., Physician with charge of Out-patients, Middlesex Hospital. London: J. and A. Churchill. 1932. Pp. 719. 21*s.*

Dr. G. E. Beaumont has had a wide experience of teaching, and has used it well in this new text-book of medicine. He has aimed at including only the essentials of medicine, having in mind the needs of students reading for examinations and of practitioners treating patients. He has succeeded in preparing a text-book which will satisfy both these groups, though the requirements differ widely. The effort which the writing of a text-book of medicine single-handed must involve has been repaid, for there is certainly a continuity and uniformity about this work that is often lacking in text-books by many authors. We have no hesitation in saying that Dr. Beaumont's book may well compare with most of its competitors, and at the remarkably low price of one guinea may be a successful rival.

The arrangement follows orthodox lines, and with the exception of psychology and dermatology the whole range of general medicine is included. The various diseases are dealt with concisely and for the most part adequately, and the space allotted to each condition is well-proportioned. The notes on treatment are sufficiently detailed to enable the practitioner to carry it out without reference to larger works; the repetition of phrases such as "any septic focus discovered should be adequately treated" may bore the student, but the practitioner should be grateful for a constant reminder of this important duty. The detailed diet sheets supplied should be of value; numerous prescriptions are to be found throughout the book. The index is usually good; we have submitted it to a searching test. But one criticism should be made—it is that medicine does not readily lend itself to a selection of essentials only. It happens too often in practice that the issue turns on an atypical symptom or an unusual sequela. Yet if we accept the principle that medicine can be presented at all adequately and in proper proportion when pruned of all extraneous matter we must admit that Dr. Beaumont has given here a good summary of medical knowledge and practice. The work is well printed and produced.

The Science and Practice of Surgery

Fourth edition. By W. H. C. ROMANIS, M.B., M.Ch. Cantab., F.R.C.S., F.R.S. Edin.; and P. H. MITCHINER, M.D., M.S. Lond., F.R.C.S. Vols. I. and II. London: J. and A. Churchill. Pp. 1762. 28*s.*

THIS book has established its place as a popular students' text-book. It has the great merit that it contains all that the undergraduate need know (and, indeed, much he need not concern himself with) in two reasonably sized volumes. This edition has been fully revised and many new illustrations have been added. Recent work on the spleen, sympathetic nervous system, rectum, parathyroids, varicose veins, burns, and blood transfusions have been incorporated.

The labour of writing a text-book on surgery is of such magnitude and in this case has been so fruitful that it is almost invidious to indicate places in which this book could be made even more useful. Speaking generally, the sections on minor surgery and on injuries to bones and joints are less satisfying than is the rest of the book. These sections give the impression that the authors have not observed very carefully the results of treatment, or they would not recommend such ineffective operations as they do for, say, ingrowing toe-nail and onychogryphosis. The difference between the prognosis after division of the dorsal and palmar tendons of the fingers is not mentioned, nor the essentially different methods of suture required. The description of the treatment of fracture of the shaft of the femur is inadequate, and the statement that the operative approach to the femur from the outer side is relatively avascular can hardly be the fruit of experience. The femur is nowadays approached from the front by a path to which the term avascular is certainly more appropriate. The method of applying strapping to the legs of a child in the Bryant suspension method, depicted in Fig. 227, would almost certainly lead to pressure sores from slipping if the weight were enough to raise the buttocks. When the authors say that in fracture of the lower end of the humerus the results are extremely good they are surely referring only to children. The statement is misleading as it stands; no emphasis is laid on the importance of early mobilisation of such fractures in adults. The only operation for recurrent dislocation of the shoulder mentioned is that of Clairmont which because of its limited success has been superseded by the much simpler procedures of Hey Groves and Henderson. Such useless and obsolete methods as removal of the cervical sympathetic for Graves's disease, epilepsy, or glaucoma might now be omitted from text-books of surgery. The authors are too optimistic in suggesting that femoral peri-arterial sympathectomy will produce considerable benefit in senile gangrene, or that due to thrombo-angeitis obliterans.

In Vol. II. we can find no mention of the use of the indwelling ureteric catheter for the pyelitis of pregnancy in which it often produces such dramatic results, nor is the ketogenic diet method of treatment described. In the section on the treatment of intrapelvic abscess the omission of any mention of the rectal or vaginal incision for drainage is curious; the student is recommended instead to give hot vaginal or rectal douches on the score that this treatment will promote spontaneous rupture. The view here taught that most cases of duodenal ulcer require surgical treatment would be regarded by the majority of surgeons as too extreme.

The general excellence of the work unfortunately throws up into relief these places, where the high standard is not maintained. But we call attention to them because the book has won such deserved popularity that a new edition will soon be called for, and adjustments in the places indicated would enhance the value of the book for teachers.

Minor Surgery of the Urinary Tract

By HERMON C. BUMPUS, Jnr., Ph.B., M.D., M.S. in Urology, F.A.C.S., Section on Urology, Mayo Clinic; Associate Professor of Urology, Mayo Foundation. London: W. B. Saunders Co., Ltd. 1932. Pp. 124. 15s.

THIS book is not, as its name might suggest, a treatise on the simpler operations that a surgeon may be called upon to perform on the urinary tract, such as circumcision and operations for varicocele. It is a book on operative cystoscopy by a well-known authority and therefore a work that will make its chief appeal to those who are expert in the use of the cystoscope. At the same time since trans-urethral methods are becoming more and more efficient and are occupying an increasingly important place in treatment, the general practitioner will find much in it that will be useful to him. As W. F. Braasch says in his short introduction, endoscopic surgery was given a tremendous impetus by the application to it, by E. Beer, of the high-frequency current. Used at first only in the treatment of vesical growths, it is now being employed for the removal of prostatic obstruction. The author's contribution to this development in prostatic surgery is well known to urologists and the book contains a good description of the Bumpus operation. However, the book deals with methods of treatment other than those associated with the use of high-frequency current. There are sections on stricture, lithotrity, the treatment of vesical ulcers by means of topical applications, the extraction of stones from the lower end of the ureter, and post-operative treatment. The fact that such modern methods as the use of a ketogenic diet in the treatment of sepsis have found a place in Dr. Bumpus's book is sufficient indication that the work is up to date.

The Principal Nervous Pathways

By A. T. RASMUSSEN, Ph.D., Professor of Neurology, University of Minnesota Medical School. London: Macmillan and Co., Ltd. 1932. Pp. 73. 12s. 6d.

TEACHERS of neurology fully recognise the importance of correlating structure and function in the nervous system, and of establishing a basis for clinical diagnosis in a sound knowledge of anatomical form. Unfortunately, however, the complexity of the system is such as often to render structural details uninteresting to the beginner, especially, perhaps, since the physiological purpose of many cell-fibre combinations is still unknown. To make the "dry bones live" is indeed a task for the instructor, and Prof. Rasmussen has sought to accomplish it by arranging anatomical data in a physiological way; he takes seriatim the main functional systems of the neuraxis and elucidates their component parts by a diagram in the first place, and a table of neuronic relationships in the second. His diagrams are of necessity laden with detail; yet, though printed in but one colour, they are remarkably clear; and if the student is not repelled by their elaborateness at his first glance he will assuredly learn much from their accuracy. Indeed, Prof. Rasmussen's charts and schemas really supply all the information about nervous pathways that can be desired by the student.

A Text-book of Neuro-anatomy

By ALBERT KUNTZ, M.D., Ph.D., Professor of Micro-anatomy in St. Louis University School of Medicine. Philadelphia: Lea and Febiger. 1932. Pp. 359. $5.50.

A NEW text-book of neuro-anatomy, written by Prof. Kuntz, should satisfy the requirements of the professing neurologist no less than of the student. The nervous system is dealt with from the standpoint of embryology, macro- and micro-anatomy, and in some degree also of physiology; apart from structural minutiæ, each of the main systems of the neuraxis is discussed in its functional relationships. Thus function is not only analysed, but it is also integrated; and as a consequence the reader obtains an excellent idea of the whole nervous system as a working and effective machine. There are nearly 200 microphotographs, drawings, and diagrams to illustrate the textual descriptions, and good bibliographical references at the close of each chapter for those who wish to prosecute their studies further. The book is of convenient size and clearly printed, and should serve a useful purpose.

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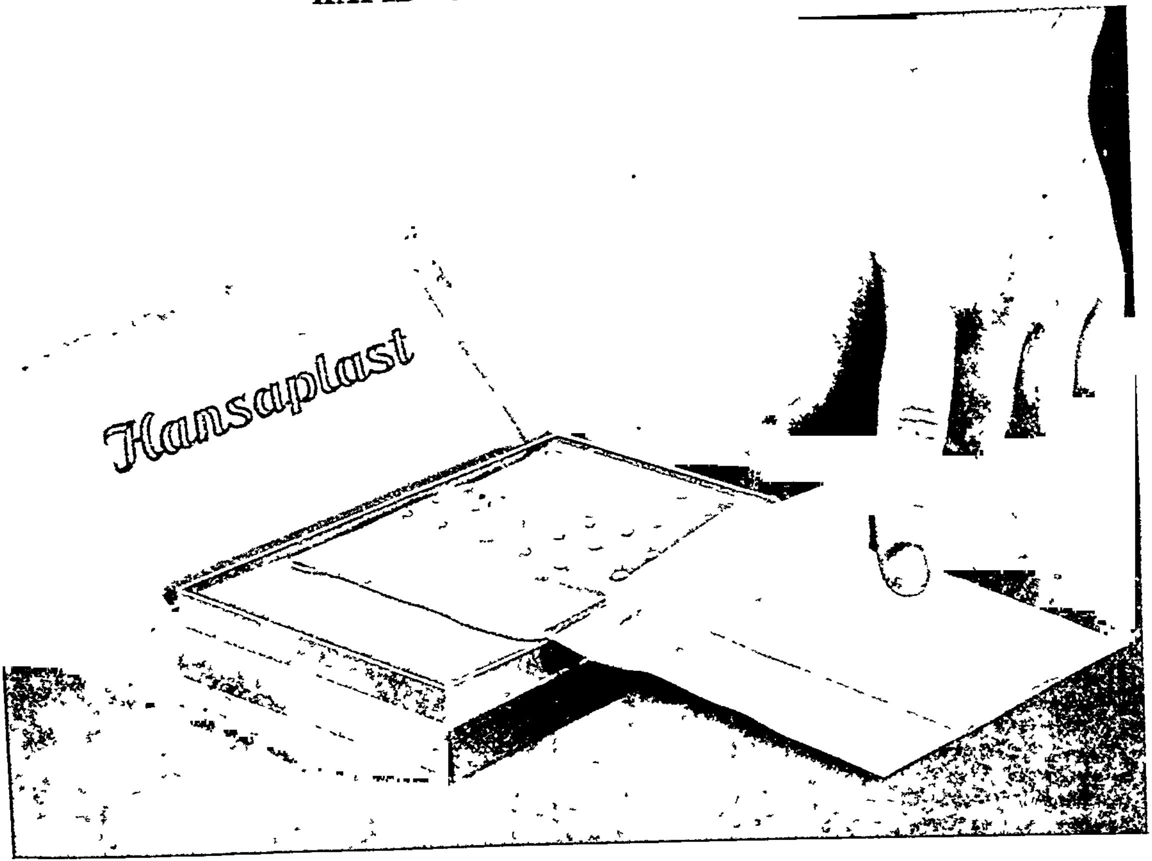

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child welfare clinics, tuberculosis, and simple health exhibitions. In Hungary, the fine State Institute of Hygiene at Budapest, founded in 1927, gives a nine months' course to 24 students and includes a nurses' school: nurses and health visitors undergo the same training in its early stages. Conditions are similar in Czechoslovakia, but in the districts of Bohemia there are far too many small hospitals and specialised clinics of various sorts—one district of 50,000 inhabitants in Prague having 11 different health organisations in charge of it. Thus concentration is necessary and it is perhaps unfortunate that hospitals and pharmacies are under the control of a legal department and not under the Ministry of Health.

Of all the Eastern European countries Yugoslavia, in the opinion of Prof. Prausnitz, is proceeding on the best plan and the most suitable and energetic lines, although of course poverty, racial and religious differences, and a low level of education mean that some time must elapse before the effects will have been felt all over the country. The mainspring of this work is Dr. Stampar, the director of the School of Hygiene at Zagreb, and so impressed were the League of Nations' authorities with the work done there that they asked Dr. Stampar and his assistant to be at the disposal of the Nanking government when they recently appealed to the League for help in reorganising the health services of China. The points which particularly excited Prof. Prausnitz's admiration were first, that the whole of the health services are unified under the Ministry of Health and Social Welfare; secondly, that each commune with a population of over 6000 has or will have a properly qualified M.O.H. and a "tertiary health centre"; thirdly, that the training in hygiene of the ordinary medical student is the finest in Europe, including as it does six months' hygiene, of which two months are spent in field work; fourthly, that architects and engineers taking the sanitary engineer's course study alongside the physicians taking the course for M.O.H.; and lastly, the splendid work done by the Peasants' University by which peasants come up for courses to Zagreb and return to their villages to become leaders of health education.

It is in Russia, as might be expected, that the most striking and original departures have been made from the generally accepted schemes of medical education. The problem before the authorities is how to produce a large number of adequately trained doctors as quickly as possible and an attempt is being made to shorten the curriculum by specialisation from the very beginning of the course. The scheme is as follows:—

1. Medical prophylactic faculty: physicians, surgeons, and dentists.
2. Sanitary prophylactic faculty: M.O.H., communal M.O.H., epidemiologists, nutritional medical officers, and factory medical officers.
3. Maternity and child welfare: women, infants, and children.
4. Physical culture.

Before beginning his studies the student has to choose or has chosen for him the faculty which he will enter, the proportionate numbers allotted to each faculty being 24, 13, 15, and 2. A choice which turns out to be unsuitable can be remedied by a course at an institute for post-graduate training. Students are of two different classes; one class enter after they have completed their ten years' education in the ordinary way, the others, in approximately equal numbers, are drawn direct from the ranks of the working-classes and are often, of course, somewhat older. Instruction is far more practical than with Western European nations and the second class of student do not appear to be inferior to the others. Students are housed, fed, and paid by the State and live in "messes" of half a dozen or so, great use being made of the spirit of competition between different groups. It should be noted that some 60–70 per cent. of the students are women. The original plan of 1930 was superseded last year by the plan outlined above; so that it is far too early to criticise any results, but it is certain that all who are interested in the teaching of preventive medicine will watch the developments in the U.S.S.R. with the greatest attention.

THE DRINKER RESPIRATOR IN ASPHYXIA NEONATORUM

THE construction of the Drinker respirator has already been described in our columns,[1] and its value in the treatment of respiratory failure in anterior poliomyelitis has been emphasised.[2] It will be recalled that the apparatus is designed to provide artificial respiration over a long period with a minimum of trauma to the respiratory system; the patient's body is placed within a closed tank, his head passing to the exterior through a closely fitting rubber collar, and by means of electrically driven blowers a negative pressure is produced within the tank, alternating with a return to atmospheric pressure. The negative pressure causes the patient's chest to expand and air to be inhaled, whilst on return to atmospheric pressure the recoil of the thorax and elasticity of the lungs result in expiration. The rate and depth of respiration can be varied at will. The method is of proved value in the treatment of carbon monoxide poisoning and in the respiratory failure in anterior poliomyelitis, and is extensively used in America; in this country an apparatus is available on application to Sir Robert Davis (187, Westminster Bridge-road, London, S.E.1).

Besides the full-size model, a much smaller apparatus of similar design has been constructed for infants. As indicated in the illustrations already published,[1] this can be heated if necessary and the child can be closely observed in it. Dr. D. P. MURPHY and Dr. J. V. SESSUMS[3] have now reported the results of treatment of 66 cases of asphyxia neonatorum with the Drinker respirator in the University of Pennsylvania and Philadelphia Lying-in Hospitals. The cases selected were those showing entire absence of respiratory activity (owing to which a number of stillborn infants were unintentionally treated) or very feeble and infrequent respirations; all treatments were started within ten minutes of birth. From earlier observations Murphy and Sessums had found that in moderate degrees of asphyxia neonatorum alternation of negative and atmospheric pressures was sufficient to bring about adequate ventilation of the lungs: but in cases of severe asphyxia they conclude from measurement of the air moving to and from the lungs that alternation of negative and positive pressure is an advantage. They therefore recommend the use of both positive and negative pressures (preferably equal) in all such cases, whether the asphyxia is severe or not. Of the 66 infants treated, 15 failed to breathe at any time, 5 breathed before but not after treatment, and of the 46 that breathed at least once during treatment, 39 developed finally an adequate degree of respiratory activity. Thirty of these last survived and nine died in hospital. A detailed analysis is given of the causes of the asphyxia as far as they could be determined on clinical and pathological grounds, and it is found that narcosis or injury (either due to breech or forceps delivery) accounted for the condition in nearly 64 per cent. of the series. Of the 36 infants which died, 19 (14 autopsies) suffered from cerebral injury; 15 were stillborn.

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[1] THE LANCET, 1931, i., 1187; also 1150.
[2] Ibid., 1932, i., 1211.
[3] Surg., Gyn., and Obst., October, 1932, p. 432.

It is concluded from the observations made that narcosis is the most common single cause of asphyxia neonatorum, and that if possible maternal narcotics should be given not later than four to five hours before the expected time of delivery. Breech deliveries, on the other hand, were followed by the greatest number of deaths. It was found in general that treatment with the respirator was of greatest value in infants suffering from excessive narcosis (since these showed the lowest mortality), and in premature infants which seemed to survive their initial asphyxia although they did not always live long after birth. As far as the effect of artificial respiration on cardiac action could be determined, it appeared to be decidedly beneficial. In no case was there any evidence of injury having been caused by use of the respirator.

THE ÆTIOLOGY OF TRACHOMA

The letter from our Budapest correspondent in our issue of Oct. 15th reminds us that the long drawn out campaign against trachoma in Eastern Europe shows few signs of drawing to a close. In some parts of Hungary the disease has long been endemic, but largely owing to the efforts of Prof. E. de Grosz the proportion of trachoma among eye cases presenting themselves at the university clinic in Budapest fell from 7·2 per cent. in 1891 to 2 per cent. in 1910. During the years 1914–1918 the segregation of trachoma in special regiments was successful in limiting infection, but when peace was restored the disbanded men carried the disease to areas hitherto immune, and in 1926 among the 8½ million inhabitants of Hungary 10,000 cases of trachoma were brought to light. In western Canada the position is equally unsatisfactory. Prof. G. M. Byers, of McGill, warned[1] the last meeting of the Canadian Medical Association of the gravity of the situation in Saskatchewan and especially Manitoba where trachoma was introduced by the Mennonites who came from Russia to settle in the Red River Valley in the early seventies. The eastern provinces into which trachoma was introduced by settlers returning from Napoleon's Egyptian campaign are now practically free of the disease as the result of favourable climate, better social conditions, and the work of oculists such as Buller and Desjardins, assisted by the absolute exclusion since 1927 of trachomatous immigrants. The disease does not now exist in Quebec city and for five years it has been found impossible to demonstrate a case of acute trachoma at McGill University. In the western provinces cases are now being rounded up and brought to the clinics by public health nurses. The disease however remains prevalent among the Indians of British Columbia and the prairie provinces: it is believed that 10,000 or more of the estimated Indian population of 110,000 have suffered from the disease.

Progress still awaits exact knowledge of ætiology. One of the last communications of the Japanese pathologist Noguchi, from the Rockefeller Institute where he spent the closing years of his life, was the announcement of the discovery of a bacillus which he believed to be the causative agent of the disease. Five years have passed and of the many pathologists who have repeated Noguchi's experiments in many countries only a very few have been able to produce evidence purporting to confirm his results. Among these few, however, were some of the Rockefeller workers, and it is worth remembering that the late Ernst Fuchs, visiting America in 1930 after examining some of the monkeys which had been inoculated with the *Bacterium granulosis*, gave it as his opinion that they were suffering from undoubted trachoma. On the other hand, Dr. Rowland P. Wilson, director of the Giza laboratories, has pointed out[2] that the form of granular folliculitis produced in monkeys by various experimenters with *B. granulosis* is indistinguishable from that which can be induced by simple measures or the form which occurs spontaneously. Most decisive is his observation that pannus has never been observed. An extended investigation of the bacteriological aspects of trachoma has been carried on for some years by Dr. Ida A. Bengtson for the U.S. public health service.[3] Attempts to isolate *B. granulosis* were made in 73 cases of human trachoma, principally from the State of Missouri, between the time when cultures of the organism were made available by the Rockefeller Institute in 1929 and July, 1931, but the results were negative in all cases. With regard to the experimental production of granular lesions in monkeys and apes by means of inoculation with cultures of the organism, the results of various workers (there are records of some 300 of such experiments) are contradictory, but in no instance apparently has it been proved that the disease is identical with trachoma in man.

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[1] Canad. Med. Assoc. Jour., October, 1932, p. 372.

[2] Brit. Jour. Ophth., 1931, xv., 433.

[3] Public Health Reports, Washington, Sept. 16th.

What has been produced by some of these experiments is a granular progressive type of lesion transmissible from animal to animal; in the tests carried out by Dr. BENGTSON herself the transmission was effected by the simple method of swabbing the diseased conjunctiva and conveying the infective material to the healthy conjunctiva of another animal. There have been a number of experiments in the transmission of trachoma from man directly to monkeys and apes, but none has yielded any striking result. A few observations are recorded on blind human subjects or on persons who volunteered to have the conjunctiva inoculated with *B. granulosis*; but although positive results have been claimed, Dr. BENGTSON considers that the results have been almost as inconclusive as in the test monkeys. To sum up, while it must be granted that the *B. granulosis* is capable of producing a granular condition of the conjunctiva in rhesus monkeys, and that this condition is transmissible from animal to animal, more efficient methods for demonstrating the organism are greatly to be desired. In America it has been demonstrated in cases of human trachoma occurring in certain districts, and this fact merits consideration, but it cannot be the efficient cause of the disease in all cases.

ANNOTATIONS

PRESENT-DAY RADIOLOGY

THE development of radiology to occupy a most important place in medicine was surveyed by Dr. Russell J. Reynolds in his presidential address to the Section of Radiology of the Royal Society of Medicine, on Oct. 21st. He dealt first with the improvements being made in the construction of tubes, apparatus, and devices for the protection of patient and worker, and in the technical methods used especially in the study of moving parts of the body. His review of the growing use of radio-opaque substances showed that hardly a cavity in the body has resisted one or other of the ingenious processes designed to make its outline visible without more than trivial inconvenience to the patient. The president pointed out that the first worker to use a radio-opaque substance in the body had been Strauss, who in 1896 had caused his patient to swallow capsules filled with barium subnitrate, and had subsequently traced them on the fluorescent screen. Lipiodol, first used in 1921, had proved of the greatest assistance in the investigation of spinal tumours, the condition of the lungs and pleural cavities, the accessory air sinuses, the genital organs, and the lacrymal sac. It should not, however, be used in cases of extreme iodine intolerance, active tuberculous disease with pyrexia, and poor health. Pyelography was, he said, another valuable aid to diagnosis; the intravenous route dated from 1923, when observers at the Mayo Clinic had found that the urinary tract could be outlined by the injection of sodium iodide. The "dye" technique for outlining the gall-bladder had been discovered in 1924. The intravenous technique for cholecystography was not often used nowadays, as oral administration gave very good results and was free from danger. The field of embryology and obstetrics had been rather more slowly invaded by radiology than other fields, but valuable information could now be obtained on the condition, age, position, and size of the fœtus, and there seemed to be no danger in a short diagnostic exposure. In 1921 D. A. Horner and in 1922 A. B. Spaulding had shown that fœtal death could be demonstrated by overlapping of the skull bones. Many methods of radio-pelvimetry had been devised, notably the simple and accurate one introduced by L. Rowden, and the condition and position of the uterus and Fallopian tubes could be ascertained with the aid of lipiodol.

Ventriculography and encephalography were invaluable for studying intracranial lesions. Recently Dr. Laruelle, at the Central Neurological Clinic in Brussels, had obtained excellent results by injecting such small quantities of air as 3 or 5 c.cm. without withdrawing any cerebro-spinal fluid, the patient suffering no inconvenience. Sialography was another recent technique. Thorotrast was now used to obtain shadows of the liver and spleen, but great care was needed. Arteriography was a valuable means of diagnosing cerebral tumours.

Despite the heavy criticism which had been levelled against the X ray as a therapeutic agent, it held a very strong position to-day. Shortly after the application of the rays for diagnosis a dermatitis with epilation had been noticed. This untoward incident had been the genesis of radiotherapy. G. B. Batten in London had treated one of the first cases of ringworm of the scalp, and cases of lupus, sycosis, and eczema had been treated very early. The effect of the rays on tissues was a destructive one, and diseased tissues were more susceptible to the effect than healthy ones. The tendency to-day is to use still higher voltages, and the rays thus produced were far more penetrating than anything previously used, so that deeper lesions could be attacked. Various methods of measuring dosage had been used in the past, but the common unit to-day was the "r." It was now possible to determine more or less accurately the exact dose given to a tumour at a certain depth under specified conditions. The tendency to-day was to fractionate the dose more and more, so that the patient's vitality was kept at a maximum, enabling him to put up the best possible fight against disease. Fortunately, as time went on, less was heard of the harmful effects of X rays. The acute burn was almost extinct, chronic burns were rare, and blood changes from short wave-length rays were few, because radiologists were realising more and more the necessity of taking reasonable precautions. In the president's view, the position of radium therapy to-day commanded great respect. Those who had used radium for some years had no doubts of its value. General experience tended to show that needles were to be preferred to seeds. During the last year or so efforts had been made to put radium therapy on a much more scientific basis. As time went on its interstitial use would more and more give place to surface technique.

A TEST FOR BLOOD

THE benzidine test for the presence of blood in urine or fæces depends upon the peroxidase action of hæmatin. It is usually performed with hydrogen peroxide or ozonic ether; the former has the disadvantage that it is readily subject to decomposition, the latter that it is expensive. Mr. John Ingham,[1] of the medical unit of the Welsh National School of Medicine, has lately drawn attention to the value of Hyperol, a compound of hydrogen peroxide and urea, in the performance of the test. Hyperol is said to be cheap and absolutely stable at ordinary temperatures. In the performance of the test on urine a few crystals of benzidine, two drops of acetic acid, a drop of urine, and a pinch of hyperol are brought together on a white plate; the presence of blood is shown by the development of the usual blue colour. In the case of fæces a watery emulsion is made and heated to over 60° C., two or three drops of acetic acid are added and the mixture is cooled. The test is performed as for urine, with a drop of the watery extract. If a more delicate test is desired the acidified watery emulsion may be extracted with ether and the test performed on the separated ethereal extract. An even higher degree of delicacy may be obtained by evaporating the ethereal extract, redissolving in water, and applying the test. Ingham claims that by this means blood may be detected in a 1 in 3,000,000 dilution; but the value of such delicacy for a clinical test is of course open to doubt.

BATHS AT MARGATE

THE Isle of Thanet claims to have the purest and most invigorating air in the world together with the maximum of sunshine and the lowest rainfall in the country. The town council of Margate has added to these natural attractions an installation of medical baths, under the supervision of Dr. G. L. Brocklehurst, the medical officer of health, where consulting rooms are available for medical men and their patients, with a trained staff to carry out the prescribed treatment. The latest addition to this is a series of Sandor foam baths for use in disorders of the cardiovascular system where other methods of applying hot air and water are undesirable. In opening this new Physical Treatment Institute on Saturday last, Sir StClair Thomson recalled that it was Dr. Lettsom, a past president of the Medical Society of London, who in 1791 founded the Royal Sea-bathing Infirmary at Margate, and was thus the pioneer in the treatment of surgical tuberculosis by climate and open air. Margate, he said, fulfilled the conditions laid down by Hippocrates in his "Airs, Places, and Waters." With its high record of sunshine, low rainfall, and freedom from mists and fogs, Margate offered special attractions for feeble and ill-developed children, for convalescence after operation or illness, for catarrh of the air-passages, and for the ever increasing number of neurasthenics. He had little doubt, Sir StClair remarked, that when Hamlet was sent to visit England, his uncle Claudius had Margate in his mind when he said:

> "Haply the seas and countries different
> With variable objects shall expel
> This something settled matter in his heart."

The "waters" of Margate provided what was perhaps the finest and safest sea-bathing in Europe, and the baths could be enjoyed all the year round. Medicine was sometimes jeered at as an uncertain science because it was always changing, but it was just because it was changing that it was progressive, and since the days of Lettsom the armamentarium of the physician had been enriched by physical methods such as massage, movements, heat and cold, wet packs, a wealth of applications of electricity, and hydrotherapy in all its forms. In the success of every remedy there was, as they all knew, a large physical element, and those healing measures would have more chance of cure in the bracing air of a town like Margate, with the interests, sports, and distractions it could supply. Every well-ordered centre of convalescence has to make good the deficiences of a northern climate, and Margate, having borne a hand for a century and a half in the treatment of tuberculous children, may now play its part in bringing home to the public the efficacy of physical treatment, given with the same accuracy and skill as drugs or operations.

IS THERE A MOTOR FACTOR IN DEXTERITY?

A REPORT[1] just published by the Industrial Health Research Board tells of a search for the existence of a motor factor—in contradistinction to a mental or intelligence factor—in the make-up of the human machine. All activities fall into the province of one or other factors. Thus the solution of a mathematical problem belongs to the mental factor, while an activity such as walking, that usually proceeds without conscious control, clearly belongs to the motor factor. Estimates of intelligence can now be made with some confidence; but estimates of manual abilities have, in the past, proved so unsatisfactory as to give rise to a doubt concerning the existence of a motor factor. Yet if such a factor does exist, and can be measured, information regarding it would be invaluable in vocational guidance. The author sought earnestly, using certain familiar laboratory tests devised for estimating manual dexterity, and he detected indications of a common motor element in all the tests in question. Then he pursued this clue by extending his search into dexterity displayed at definite industrial operations of accepted utility, such as wrapping shaving soap or toffee, packing needles, and making flies for angling. Evidence was forthcoming of the existence of a motor factor common to each test, and of its being central in origin rather than localised in the end organs. While the precise nature of the factor remains obscure, it seems to be largely manipulative, dependent perhaps on factors, such as hand and eye coördination, and speed of movement. One side point of interest emerged in the inquiry—viz., that in many dexterous performances speed is promoted rather than decreased by regard to accuracy.

BERTRAM WINDLE

THERE are men of whom it is difficult to say what they did that was great, while feeling that they filled rightly a great place in affairs. To this category belongs Sir Bertram Windle, whose affectionate biography has just appeared.[2] He was a distinguished biologist, wrote and examined much on anatomy, and the doors of the Royal Society were opened to him early in his career. He was a constructive authority on education, and held university professorships in England, Ireland, and Canada, impressing his own individuality on the first two in particular, and advancing generally measures of progress. At Birmingham, where he was professor of anatomy and anthropology for 20 years, he was one of the prominent advocates of the institution of the University. At Cork he did much energetic work as principal of University College, and here his devotion alike to scientific research and Roman Catholic doctrine furnished him with intimate material for semi-theological argument and for the writing of that valuable book in defence of revelation, "The Church and Science." He sat for considerable periods on the General Medical Council, representing first the University of Birmingham and later the National University of Ireland, and he was the author, outside scientific papers, of many books of history and archæological associations with the countryside. A many-sided personality, his interests were perhaps too diffused to ensure any one of them being pursued to the point at which he aimed, and this can be surmised from the long record of his life so piously set out by his biographer.

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[1] Biochem. Jour., 1932, xxvi., 1124.

[1] An Experimental Study of Certain Forms of Manual Dexterity. By J. N. Langdon. Report No. 66. London: H.M. Stationery Office. 1s.

[2] Sir Bertram Windle: a Memoir. By Monica Taylor. London: Longmans, Green and Co. 1932. Pp. 428. 12s. 6d.

THE STORY OF HEALTH INSURANCE

While maintaining a pleasant format and arrangement Dr. McCleary has managed to encompass within his little book[1] a fairly comprehensive review of national health insurance, regarded especially as a measure of public health. The practitioner, whether on the panel or not, should find a place for it on his bookshelves, even in these hard times. The book is not intended in any sense as a handbook for the insurance doctor; his needs in this respect are well provided for elsewhere. The man who is interested in his job, however, will be glad to read how health insurance has come about and how it works elsewhere; with some general reflections on the good points and the bad of the British system. In Europe, we read, a system of national health insurance on a compulsory basis now finds its place in nearly every country. France is one of the latest to adopt a system which on its medical side follows the essential provisions of the British plan, though with a closer approximation to the conditions of private practice. It is interesting to be reminded that the foreshadowing of a compulsory scheme in this country in Mr. Lloyd George's budget of 1909, based on a Bismarckian precedent, actually went for some weeks unnoticed in the medical press, except for the remarkable letter[2] in our own columns by the late Dr. J. A. Keay of Greenwich. Those who would like to read again of the events of 1911—how the Statute left the House of Commons a very different measure from that which was introduced; how the British Medical Association carried in substance their six cardinal points (the panel system, we are reminded, did not owe its origin to the Government but to the Association); and how, as they were humorously told by the *Westminster Gazette*, the Association did not know when it had won—will find the story well told in these pages. Dr. McCleary tells us that insurance, of a kind, commenced with the social guilds in the middle ages and, passing through other stages, including the wonderful provision made by the friendly societies in this country, ended in the compulsory scheme in which those societies themselves played such an active part. Many a harassed panel doctor will read with a sigh of the declaration required from its members by the eighteenth century Loyal Unity Union Society of Lancashire:—

> "I do declare that I will not complain of sickness so as to be troublesome to the box [the old name for the sickness funds] without just cause . . . and as soon as it shall please God to give me health and strength I will immediately declare off the box."

The chapters on the social value of health insurance and its future development will be read with special interest. The medical service will, in the author's opinion, inevitably tend to become separated from the cash benefits, and yet, great as are the deficiencies of the service and great as is the need for its coordination with the health work of local authorities, the medical service remained untouched by the insurance legislation which followed the Royal Commission of 1926 and by the Local Government Act of 1929. Two other quotations in Dr. McCleary's book are of interest. Of the medical service he writes: "The most effective influence that keeps the insurance practitioner up to the mark is his own professional conscience." And of the insured person: "Deliberate imposture is not common. But it is not difficult for a man with a slight ailment to persuade himself that his repugnance to sustained exertion is evidence of incapacity for work."

THE ECONOMICS OF TUBERCULOSIS

IN a presidential address to the Tuberculosis Association, on Oct. 21st, Dr. Jane Walker began by remarking that if infection is to be the basis of any attempt to control tuberculosis it was doomed to failure. The control was largely psychological; anything that lowered vitality, whether it was anxiety, softness of living, poorness of living, bad housing, alcoholism, or what not, tended to make an easy victim to the disease. Economically considered, perhaps the most important difference between tuberculosis and most other infectious diseases was the length of time it lasted, and the great variety of its manifestations. No accurate figures were available about the incidence of tuberculosis in England and Wales; the incidence of the disease must be measured by its death-rate, which was going down. In England and Wales in 1901 the deaths from tuberculosis numbered 58,930; in 1911, when the first National Health Insurance Act was passed, they numbered 53,120—a drop of 5810 before the great concerted effort began. Public opinion, said Dr. Walker, was not aroused until the worst was over. The decline was obviously not entirely due to the anti-tuberculosis measures taken; it might be due, at least in part, to what had been called "the subsidence of a prolonged epidemic wave," as in the analogous cases of small-pox and scarlet fever. But we were, she added, constantly being pulled up and brought face to face with some new factor in this disease, such as the observation that the mortality among young women had not gone down at the same rate as that among young men. It had, in fact, even risen to some extent. The same thing occurred during the war, and there was, she thought, a clear connexion between the two observations. At one time tuberculosis was regarded as a home disease, and it was thought that if people got out more and perhaps earned more money to put into food and other household amenities, tuberculosis would go down. The increased mortality-rate among young women did not bear this out. Many of the occupations held by women at the present time involved more arduous exertion than had been customary for them, and it was true, as Dr. Burton Fanning had said, "there are few causes more powerful to determine the outbreak of pulmonary tuberculosis than physical over-exertion. In at least 10 per cent. of my patients the disease seemed directly attributable to their having overdone themselves. . . . It is important to recognise that although exercise be taken in the open air, it is conducive to the development of consumption if it entails exhaustion or fatigue." It was a fact, however, that whatever the causes of the decline might be the general tuberculosis mortality was steadily going down. What the Association had to consider was how could the decline be speeded up. The tragic result of tuberculosis was the patient's gradual loss of working efficiency, so that he fell steadily in the social scale because less and less money was coming in. These cases, steadily getting worse and so less efficient, were the real crux of the problem; they were not the cases with which the sanatorium should be expected to deal. For such patients really cheap accommodation should be provided without the paraphernalia deemed necessary for cases likely on the one hand to die quite shortly, or on the other to recover and take their place in the world as useful citizens. Such institutions would need few nurses and no resident medical officer; the food might be of the same nature as that to which the patients were accustomed at home; and, since the buildings need not be designed on the lines of a modern sanatorium, it might be possible to take over for this purpose some of the mansions which their owners were now unable to keep up. The ordinary work of such a house could be undertaken by the patients. Each of these institutions should be for one sex only, the supervision being easier and the place less costly to run. Household duties would not occupy all their time, and some definite occupation should be carried on whereby the inmates might earn a little money varying with their proficiency. While a plan of this kind would suffice for single men and women, for the families there was nothing better than removal to a village settlement. Success in dealing with tuberculosis did not lie in any one direction.

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[1] National Health Insurance. By G. F. McCleary, M.D., D.P.H. London: H. K. Lewis and Co. 6s.

[2] THE LANCET, 1909, i., 1485.

VIRUSES OF THE POCK DISEASES

Discussing vaccination and small-pox in his presidential address to the Pathological Society of Manchester on Oct. 12th, Prof. H. B. Maitland spoke of the possibility of modifying the viruses of the pock diseases by passage through various animal species. Not only could changes in pathogenicity and tissue affinities be effected, but it had been shown recently that the viruses may be altered to some extent antigenically. There was still, however, some essential antigenic correspondence between variola and vaccinia, since vaccination protected against small-pox. The virus of vaccinia was now held to be represented by the Paschen bodies. The nature of immunity to vaccinia was on broad lines comparable to antibacterial immunity. Antibodies had been demonstrated by the reactions of agglutination, precipitation, and complement fixation. They could also be demonstrated by the in-vitro neutralisation test. It appeared probable that the virus was sensitised by contact with immune serum. It was not rapidly destroyed, and virus could be recovered for a time from such a mixture. There was evidence that phagocytosis might be an important factor in immunity. Prof. Maitland made the interesting suggestion that the production and study of culture-virus had now reached a stage in laboratory investigations when serious consideration should be given to the possibilities of utilising it on a large scale for human prophylaxis. The lesions produced by culture-virus were like those caused by calf-lymph, and an advantage of using culture-virus as a substitute for calf-lymph in performing vaccination on children would be its freedom from bacteria. Prof. Maitland noted that the establishment of immunity to vaccinia without the production of lesions had now been achieved in animals. Killed virus was a weak immunising agent, but its efficiency might depend on the method used for killing it. Further exploration might reveal that the best conditions for preparing a killed prophylactic had not been attained. Mixtures of virus and immune serum could induce a considerable degree of resistance in rabbits and monkeys, and might in man be capable of providing a serviceable immunity. In such mixtures the virus was not dead, but its admixture with serum prevented the occurrence of lesions. There was some evidence to suggest that resistance to vaccination after recovery from infection might depend upon the persistence of living virus in the tissues, but this point had not been fully worked out. Whatever future work may bring, Prof. Maitland made it clear that at the present time the fact that living virus is much more effective than dead virus in establishing immunity is indisputable.

CHAUCER AND MEDIÆVAL MEDICINE

At the ninth international congress of the history of medicine held at Bucharest from Sept. 10th to 18th, under the presidency of Dr. Victor Gomoiu, Dr. J. D. Rolleston, the representative of the British Government and delegate of the Royal Society of Medicine, presented a paper on Chaucer and Mediæval Medicine. With the object of illustrating contemporary medicine by quotations from belletristic literature, as he had done in several previous essays, Dr. Rolleston had collected the various medical allusions in Chaucer's works under the headings of the medical profession in Chaucer's time, contemporary medical doctrines, various diseases and their treatment, and miscellaneous topics. The doctor of physic portrayed in the Prologue to the Canterbury Tales stands for the properly qualified practitioner of the time who had been brought up on the works of Hippocrates, Galen, Rhazes, Avicenna, and other medical authorities, and was probably modelled on John of Gaddesden. The contemporary medical doctrines of the four elements—earth, air, fire, and water—of which man was thought to be composed, of the four humours—hot, cold, moist, and dry—and of the four complexions or temperaments—the sanguine, the choleric, the phlegmatic, and the melancholic—are illustrated in several passages in the Canterbury Tales and elsewhere in Chaucer, the somnour in particular being an excellent example of the sanguine type. The same pilgrim was also the subject of an intractable acne rosacea which was doubtless not unconnected with his alcoholic habits. After quoting the passages relating to the plague, leprosy, and malaria, which were the most important diseases prevalent in Chaucer's time, Dr. Rolleston maintained that in view of the frank presentation of the physical side of sexual life in Chaucer's works, the absence of any allusion to syphilis, which was so frequently mentioned in Shakespeare two centuries later, was extremely valuable evidence against the existence of the disease in the age of Chaucer. Had syphilis been prevalent then Chaucer would most probably have represented one or more of the free-living pilgrims as suffering therefrom, and the section in the Parson's Tale relating to "leccherie" would have included a warning of the dangers awaiting the sinner. As regards treatment, the principal remedies mentioned by Chaucer were such drugs as emetics, purgatives, aphrodisiacs, and the panacea theriaca which had been handed down from classical antiquity, and in the middle ages was called triacle, ointments, herbs, and charms. The miscellaneous topics of medical interest in Chaucer include the passages in the Parson's Tale dealing with the overlying of children, criminal abortion, and infanticide, the existence of privies, and the success of quack veterinary practice, so amusingly described in the Prologue to the Pardoner's Tale.

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Three methods of controlling tuberculosis suggest themselves :

(*a*) Attempts to reduce the quantity of toxins reaching the circulation.
(*b*) Attempts to neutralise the toxins by producing active or passive immunity.
(*c*) Chemotherapy. This is probably the method of the future, but the ideal drug which will kill the organism in the lesion has not yet been discovered.

It has long been known that rest is the important thing in the treatment of tuberculosis. Dr. Marcus Paterson many years ago introduced treatment by absolute rest ; the febrile patient was kept motionless in bed and was not even allowed to feed himself. This was a great advance in treatment, and was followed by attempts to put the focus of disease at rest by collapsing the lung by means of artificial pneumothorax, by oleothorax, avulsion of the phrenic nerve, and thoracoplasty. The general practitioner is chiefly concerned with the treatment of the patient after he has left the sanatorium. He must be made to rest at once on the appearance of a warning symptom ; relapses are due to neglect of these warnings.

Attempts to procure specific immunity by means of tuberculin have never been satisfactory. The patient who has recovered from the disease is more likely than the ordinary person to acquire another tuberculous lesion later in life. Tuberculin can be used to raise the patient's resistance against tuberculotoxæmia, and does relieve symptoms to some extent. As regards chemotherapy, sanocrysin seems to benefit certain cases, but there are many contraindications to its use, and many patients appear to have idiosyncrasy to it, so that the number of cases in which it can be used with advantage is limited.

The general treatment consists of rest, fresh air, and good food. Rest is essential ; an overdose cannot do harm. Marcus Paterson thought that immunity could be induced by releasing into the patients circulation at intervals a certain amount of tuberculin from the lesion itself, and introduced the system of graded exercises. The hypothesis was incorrect but the treatment was sound ; graded exercises act as a test of progress. Emotional excitement must be classed with exercise.

Sanatoriums provide a healthy, regular life under continual supervision more cheaply than it can be obtained in the patient's home ; moreover, they provide the element of mental rest which can never be attained in the bosom of one's family. The patient, when he begins to get about, has the advantage of companionship with people who have to grade their output like himself. He will not be discouraged by the sight of patients with symptoms, because in a well-run sanatorium such patients will be kept out of sight in bed. Clean air is valuable, but complete exposure to open air in all weathers is undesirable. The public think immediately of Switzerland when tuberculosis is mentioned ; many Swiss sanatoriums are good, but they seldom have grounds attached to them, consequently patients are beyond the supervision of the superintendent when they go out for exercise. English sanatoriums have good grounds, and it is advisable to send the patient to an English sanatorium in the early stages, and to Switzerland, if he wishes, for convalescence. Burney Yeo's aphorism holds good : "Care without climate is better than climate without care." A patient should not go to Switzerland unless he can afford to live comfortably when he gets there. There are disadvantages in the tropics for these patients, but they have the recommendation that appointments there are fairly easily obtainable in which the patient will be able to sit still and direct other people. In parts of South Africa the dust is a disadvantage, and patients do not do well ; in British Columbia, California, the Argentine, and Nairobi, however, the benefit of climate is great.

An occupation in which the patient is his own master and can slacken work when necessary suits these cases best. There is a prevalent idea that people with tuberculosis should live in the country, and many move out of town, coming in by train daily ; a few can stand the double train journey in addition to the day's work, but most of them will do better by staying in town. Again, some patients, impressed with the importance of fresh air, go for a long bicycle ride after their work ; they would do much better to rest. A philanthropic society used to get patients after leaving sanatoriums posts as 'bus conductors, until it was found that conductors traverse about 15 miles a day at a jog-trot up and down stairs. The same society also tried to turn clerks into farm labourers at a wage of 28*s*. a week. A farmer estimated that a man loading hay had to lift about three tons a day. The strength of the patient is not equal to the task, and the standard of living at such a wage is too low ; such experiments are doomed to failure.

A good mixed diet with a four-hour interval between meals suits these patients best. The old fad for giving them enormous quantities of milk—four pints a day—only led to dyspeptic symptoms, and has now been abandoned. If the patient likes extra milk and can take it let him have it, but never force it upon him. The amount of vitamins necessary to satisfy nature is so small that there is no reason to add them specifically to a good general diet. Salad dressed with olive oil is a useful means of introducing extra fat into the diet. Many cases of alcoholism owe their origin to tuberculosis ; the patient drinks to get rid of the sense of fatigue. Alcohol in small quantities, however, may be useful to stimulate appetite, and in older people, accustomed to alcohol, it is of decided value, causing vasodilatation and easing the action of the heart.

TREATMENT OF COLI BACILLURIA BY A KETOGENIC DIET

(Dr. C. M. Wilson)

Infection of the urinary tract by the colon bacillus is common, and a substantial minority of those who suffer from this infection fail to respond to either medical or surgical treatment. In May I had qualified for membership of that minority by seven months ineffectual search for relief, when Prof. Cabot was good enough to give me the proportions of fat, carbohydrates, and proteins in the ketogenic diet with which Clark and Helmholtz had reported encouraging results.

On the third day the urine was nearly clear ; by the end of the sixth day it was reported sterile. I remained on the diet for another week and then ate anything. Since that date four months have passed without a recurrence of the infection.

I shall try to tell you how the diet may be made comparatively inoffensive to the patient, and what results have been obtained in the treatment of 20 adults with *B. coli* infection of the urinary tract, who were deliberately chosen on account of the chronicity of the infection. The diet used has been varied with the patient, but the proportions of protein, fat, and carbohydrate have remained fairly constant: 60 g. of protein, 240 g. of fat, and 20 g. of carbohydrate. It would be idle to pretend that patients like the diet, but with care and a little imagination it can be robbed of most of its disagreeable features. We have to reconcile them to 240 g. of fat in the day, and to the almost total deprivation of carbohydrates. Protein is given in the normal amount.

If fat is disliked in one form, it can be given in another. Let us suppose the 240 g. of fat are given as :—

10 oz.	cream 40 per cent.	containing	100	grammes of fat.
3½ ,,	butter	,,	90	
2 ,,	fat bacon	,,	36	

The remainder of the fat is taken in meat and eggs. It is the butter and cream to which most patients object. If a jug of cream and a slab of butter with some diabetic biscuits are presented to the patient he will soon quarrel with the diet. As much as possible of both butter and cream should be used in cooking. A vegetable cream soup and a fruit fool will not leave much cream to be taken with tea or coffee. In my experience of the diet I found the butter a stumbling-block. As we shall see presently, we have no carbohydrate to spare for breadstuffs or biscuits. There are two alternatives: to eat the butter with diabetic biscuits, or to use it in cooking in a vegetable purée, in buttered eggs, or in an omelette. If it is desired to reduce the butter or cream, half an ounce of olive oil night and morning will supply 30 g. of fat and provide a substitute.

Only 20 g. of carbohydrate are allowed, and of this 10 g. have been used in the cream. The remaining 10 g. can be taken as fruit, a good vehicle for cream; or 5 g. may be given as fruit and 5 g. as milk in a custard, junket, or milk-jelly. In the American literature the patient is gradually broken into the diet by substituting fat for carbohydrates over some days, but this of course prolongs the agony, and in my experience embarking straightway on the full diet seldom leads to nausea.

However cunningly the diet be planned, the patient will ask how long he must endure it. In long-standing infection one to three weeks is commonly necessary to sterilise the urine. Most of my patients have continued the diet for a week after the urine was sterile. We do not yet know if it is necessary to persevere longer with the diet to avoid relapses. I find no mention of relapses in the American literature, but in one of my cases, a woman who did not attempt to diet after the urine had been sterile for four days, the infection returned a month later, to respond again to the diet. The permanence of these results has yet to be established.

In the absence of fever, exercise assists the oxidation of fat and helps the ketosis to develop. If the infection is associated with fever the patient may have difficulty in dealing with the diet, but this does not necessarily follow. Occasionally we have to await the fall of the temperature before dieting. The intake of fluids should not exceed the normal.

To cure a malady that has long resisted medical and surgical measures by nothing more troublesome than a typed diet sheet is sufficiently attractive to obscure for a moment the time and trouble essential to success in a treatment dependent on exact quantitative dieting. It is not enough to prescribe a diet high in fat and low in carbohydrates. Everything must be weighed. Apart too from the time absorbed in planning the diet in the required proportions and in presenting it in a palatable form, the practitioner may find it difficult to get the pH of the urine estimated. The pH of the urine of a person who is on a mixed diet is commonly between 6·0 and 7·0, precisely the pH most favourable to the growth of *B. coli.* Schohl and Janney found that colon bacilli are inhibited from growing in urine with a pH 4·6 to 5 on the acid side and 9·2 to 9·6 on the alkaline side. It is the purpose of the ketogenic diet to lower the pH to 5 or less. If the pH remains at 6 for example, either the patient belongs to the small minority who cannot digest or assimilate the amount of fat necessary to produce the ketone bodies in the urine, when the treatment must be abandoned, or the patient is not adhering strictly to the diet. Without the assistance of the pH one is working in the dark; the patient may be dieted for two or three weeks without once obtaining the pH necessary to inhibit the growth of the colon bacillus. It is as if one treated diabetes with only the symptoms of the disease as guidance and without any knowledge of the presence or absence of sugar in the urine.

We have found occasionally that the urine has been sterile before the pH fell to 5·0 or less. W. M. Clark noticed this and concluded that in a highly buffered medium such as urine while the hydrogen-ion concentration is the chief limiting factor, the urine may contain substances that have a bactericidal action independent of their acidity. But in practice estimations of the pH warn one when the conditions essential to success are absent, or enable one to assure the patient that perseverance with the diet will be rewarded.

Helmholtz has had very encouraging results with children, but I shall confine my remarks here to adults, and to adults in whom the infection has become chronic. During the past four months I have treated 20 patients in whom the duration of the infection with the colon bacillus has varied from 7 months to 18 years. From such a small number so recently discharged only tentative conclusions can be made. One patient relapsed as I have recorded, the urine again becoming sterile after renewed dieting. The course of the remainder was uneventful. The urine in all became sterile and has remained sterile. Early writers in American literature wrote that if the kidney is considerably damaged by infection the patient may be unable to secrete enough ketone bodies or to secrete a sufficiently acid urine to inhibit the growth of the bacteria. In my experience the duration of the infection has never been a barrier to the sterilisation of the urine. Moreover, tests of the functional efficiency of the kidney in these prolonged infections showed no impairment of function. Sufficient time has not elapsed to establish the permanency of these results, yet as they stand they are remarkable.

Mrs. A., aged 54. In 1914 after the birth of her second child had a severe attack of pyelitis with pus and colon bacilli in the urine. She was in bed for three months. From that date there is a history of severe attacks of pyelitis at intervals with severe renal pain and rigors. In 1925 the urinary tract was washed out with temporary improvement; this was repeated several times subsequently. From 1928 to 1931 the attacks had increased in frequency and severity. Early in June of this year she was given a ketogenic diet.

The pH came down to 5·0 and 5·2, but rose again gradually to 5·4 and 5·6 without any relaxation of the diet. On the 24th day of the treatment the urine was sterile. Her husband, a doctor, reported nearly four months later, "has greatly improved, no longer a chronic invalid, has put on 12 lb. in weight and the urine is still sterile." Hexamine, alkalis, urotropine, Caprokol, Cystopurin, Neotropin, Pyridium, and vaccines had been given a prolonged trial. From 1905 there was a history of severe sinus infection with repeated washings out of both antra, a radical operation on the ethmoid and sphenoidal cells, and finally the drainage of the right frontal sinus. While on the diet the advisability of further surgical measures was under consideration.

In another patient in whom the infection dated back 16 years the urine became sterile in three and a half weeks. A third woman with a history of repeated attacks over 13 years had had the urinary tract washed out in 1920, 1922, 1928, 1929, and 1930. The colon bacilli responded to the dieting, but a streptococcal infection of the urinary tract persisted. A fourth patient with an infection dating from a pregnancy four and a half years ago had sterile urine on the 23rd day. In a man who had had an innocent vesical papilloma removed and later after a stone had been extracted from the bladder had developed a fistula, an infection with Morgan's bacillus proved rather more obstinate, but the urine was found to be sterile after six weeks.

In bacilluria a large number of different gram-negative organisms are found. Of these the growth of the colon bacillus is most readily inhibited by the ketogenic diet. A bacteriological examination of the urine was carried out once a week by Captain Hayden. A positive ferric chloride test was accepted as evidence of an adequate ketosis. The use of the ketogenic diet over long periods in the treatment of epilepsy had brought assurance that no ill-effects followed the diet and none was noted in our experience. Most of the patients lost a few pounds in weight probably as the result of dehydration.

HEAD INJURIES AND THEIR SEQUELS

I.—(Mr. Hugh Cairns)

II.—(Dr. W. Russell Brain)

I.—In dealing with acute head injuries it is as well to move the patient straight from the scene of accident into a hospital or nursing home if possible. It is easier to impose rest upon the patient when in hospital, and besides it is impossible to say at the outset whether a case is going to need operation or not. On the way to the ward, have the skull of the patient radiographed. Although in recent years the amount of injury to the brain, and not the presence of fracture of the skull has come to be regarded as the important factor, this is not appreciated in a court of law, and the jury will always want to know whether the skull was fractured. Besides this, X rays will demonstrate the presence of a depressed fracture, and may show some unusual condition which would *otherwise be missed.*

One patient, a chauffeur, had been thrown head-on to a lamp-post. He was unconscious for five days, and on recovery showed signs of damage to the right optic and olfactory nerves. Some weeks later he developed weakness of the left arm and leg. Radiography showed a quantity of air inside his skull, and fracture of the right frontal sinus. He passed cerebro-spinal fluid from his nose whenever he sat up. *At operation* he was found to have an aerocele of the right frontal lobe of the cerebrum; a hollow needle was inserted and the brain collapsed with a puff. The dura had to be closed so as to prevent the further escape of cerebro-spinal fluid.

A man passing cerebro-spinal fluid from the nose is living on a volcano. In this case striated muscle-fibres were found in the fluid passed on the first day, which proved to have come from the sausage the patient had eaten or breakfast. The danger of infection of the meninges in such a case is naturally very great.

The first thing to do with a patient with an acute head injury is to put him to bed in a darkened room and to decide whether he needs to be treated medically or surgically. Routine observations must be made hourly of the pulse, temperature, and respiration, the state of unconsciousness—whether the patient is deeply unconscious or only stuporose—the state of the pupils, and any indications of paralysis. These observations must be committed to paper, for otherwise it is extremely difficult to avoid confusion after two or three hours. The general treatment for mild and doubtful cases is to ensure rest and give sedatives; a decompression can be undertaken if the symptoms require it.

A wound of the head may involve the scalp only or may lie over a fracture with injury to the dura. The patient with a head wound should be taken to the operating theatre as soon as he has recovered from shock, and the hair should be shaved away over a wide area round the injury. When the wound has been cleaned the underlying *bone must be examined.* If a linear fracture is present it is usually safe to leave it alone, but if there is any overlapping, however slight, a piece of bone must be taken out to see what is underneath. In one case, where the two edges of the fracture had slipped back almost into apposition after the accident, a quantity of manure was found inside the skull, having entered at the instant during which the bone gaped in the moment of injury. Foreign matter can be removed best by a suction apparatus. If the dura is torn it must be opened up and the underlying region must be cleaned with the suction apparatus. The wound must be drained; the dura should be loosely sutured and the drainage-tube brought down to, but not through it. Anti-tetanic serum should be given while the patient is under the anæsthetic; the head bandage must be firm and can be given a covering of plaster-of-Paris, since these patients are sometimes violent when they recover consciousness. It is an open question whether operation should be undertaken *for simple depressed fracture.* If the depression of the fracture is deep it is advisable to operate, but there is no necessity for urgent action.

Tearing of the middle meningeal artery is rare, and too much emphasis has been laid upon it as a cause of intracranial hæmorrhage. The striking course which these cases run has helped to make them notable. The patient has a slight head injury, is concussed for a moment and then appears to make a complete recovery; after a few hours he loses consciousness and may show Jacksonian fits. Intracranial hæmorrhage from other vessels, however, produces rapidly deepening unconsciousness after a lucid interval in the same way. The treatment is to make a small hole in the skull and look for a clot; it is commoner to find a subdural than an extradural hæmorrhage. If a clot is found the hole must be enlarged and the blood sucked out.

Intracerebral hæmorrhage sometimes occurs from *direct injury, for example* when a baby at a cricket match receives a boundary hit on the skull. Symptoms may include advancing paralysis, sensory loss, and papillœdema. In such cases it is worth operating for intracerebral hæmorrhage, for it is possible to remove the clot. In cases of focal contusion, though it is not essential, it may be useful to operate, because decompression helps the condition to clear up, and if it is performed under the temporal muscle the bone defect can be well protected. Chronic subdural hæmatoma often follows a trivial rather than a severe head injury. About a month after the accident the patient becomes irritable and drowsy and complains of headache and weakness of one arm and leg. A gradually enlarging clot is pressing on the surface of the hemisphere causing these slowly advancing symptoms. The bleeding is usually from cerebral veins which have been torn as they go through the dura to the longitudinal sinus. The treatment is to make a small hole on each side of the skull and, when the clot is located, to suck it out. Only exceptional cases of head injury need surgical treatment; in most cases operation plays no part.

(Dr. W. Russell Brain)

II.—Concussion is a paralysis of part of the function of the central nervous system due to a blow on the head. Recovery takes place unless the vital centres in the medulla are paralysed. Cerebral contusion is the commonest form of head injury; it is associated with hæmorrhages of varying size scattered through the cortex, and œdema round the nerve-cells and in the perivascular spaces. Laceration is a breach in continuity of the brain substance, usually the cortex, which may give rise to focal symptoms. Traumatic cerebral compression is usually due to hæmorrhage.

In mild cases the patient with concussion is dazed; he may finish playing a game of football and recall nothing of it afterwards. In more severe cases he loses consciousness and may die from medullary paralysis; most patients, however, recover within 48 hours. Contusion may occur without concussion, but in severe cases the patient is concussed as well. After recovering consciousness the patient becomes confused, irritable, and excitable, and may complain of headache; occasionally mental symptoms persist and a mild maniacal condition supervenes.

One patient of this kind whenever he met three people walking together in the street felt impelled to attack them, though two or four left him undisturbed; he also felt moved to plunge table knives into people in order to experience the sense of suction as he drew the knife out of the flesh.

In other cases there may be monoplegia and sensory or visual symptoms. An important group of patients are those with symptoms due to contusion of the mid-brain; there may be diplopia, mild cerebellar symptoms or, rarely, symptoms of diabetes insipidus. Mild forms of this appear to be commoner after head injury than is generally suspected. The urinary output should therefore be measured in all cases. In severe cases pituitrin will be required indefinitely.

Focal lesions of the spinal cord may also follow a blow on the head, and hæmorrhage into the spinal cord should be borne in mind when symptoms of paralysis develop after a head injury. Lumbar puncture should be performed in all cases of head injury, and in severe cases blood will be found in the cerebro-spinal fluid. The pressure of the fluid should be measured with a manometer; it will usually be raised but sometimes it is subnormal, and here the treatment has to be modified slightly, as I shall presently describe.

Concussion is rarely fatal. Contusion may prove fatal, but is more important as a cause of prolonged disability. In one series of cases of contusion it was found that 10 per cent. of the patients were totally incapacitated, and more than half were unable to return to their normal occupations.

The treatment of concussion is to keep the patient in bed in a darkened room and give sedatives and analgesics; a saline purge helps to relieve the intracranial pressure. Three or four days at least should be spent in bed, and longer if possible, because some degree of contusion may also be present. Even mild cases of contusion require three or four weeks in bed. The method of cerebral dehydration by intravenous injection of hypertonic solutions of salt or glucose is disappointing; the perivascular spaces in the brain are probably too closely packed with blood or œdema for the normal mechanism of absorption to act. There is no harm in giving hypertonic solutions of magnesium sulphate by the rectum.

If, on performing lumbar puncture, the pressure of the cerebro-spinal fluid is found to be raised the patient will be more comfortable propped up with pillows; if, on the other hand, the pressure is low, the patient should lie flat without a pillow and with the foot of the bed raised on blocks; he should also be given plenty of fluid, drinking, if possible, a gallon a day. Air can be injected into the spinal canal through a lumbar puncture needle to raise the pressure, but I have found this method disappointing.

Often people who have had head injuries complain of disabling symptoms when they are up and about again. Paroxysmal pain in the head, worse on stooping, is a common complaint, and giddiness, irritability, nervousness, and incapacity for work are other symptoms. These symptoms are organic and not due to neurosis. Prolonged rest in bed is required in such cases; and bromide and magnesium sulphate should be given.

Other late effects of head injuries are cranial nerve palsies. Each nostril should be tested separately for loss of the olfactory sense, since anosmia usually indicates a fracture involving the anterior fossa.

Injury of the optic nerve is followed by atrophy of the damaged fibres and a corresponding permanent impairment of vision. The prognosis is disappointing when there is injury to the nerves supplying the muscles of the eyeball. The seventh and eighth nerves may be involved in fracture of the mastoid process, and are then unlikely to recover; but branches of the fifth and seventh nerves may be contused by a blow on the face, and in these cases complete recovery occurs.

Traumatic epilepsy is comparatively rare in civil life; during the war 5 to 10 per cent. of cases developed the condition following gunshot wounds of the head. It is most likely to arise when the dura has been torn and formed scars. The treatment should be medical for at least two or three years, and only in exceptional cases should surgical interference be considered.

New Sussex Hospital for Women, Brighton.—On Oct. 11th Lady Campion, chairman of the governors, reopened a ward which for two years had been closed but which Mr. C. H. Corbett, the hon. treasurer, has now redecorated and re-equipped in memory of his wife. It will be known as the Marie Corbett ward, and be used for patients reaching the convalescent stage, in whom Mrs. Corbett had always been greatly interested.

Reduced Costs at Coventry.—During the first eight months of the present year the cost of provisions at the Coventry and Warwickshire Hospital has been reduced from £5652 in the corresponding period of last year to £4383. There has also been a saving at the Alcock Convalescent Hospital. The cost per patient per day at the main hospital has thus been lowered from 21·4*d.* to 16·3*d.* Supplies are now purchased personally by members of the staff in the market.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Criminal Abortion : Evidence of Previous Conviction

Richard William Starkie, sentenced at the Central Criminal Court last July on a charge of having unlawfully used an instrument with intent to procure miscarriage, has been refused leave to appeal. His application for this purpose, disposed of by the Court of Criminal Appeal on Oct. 17th, raised a novel and interesting point. His counsel at the trial had elicited the fact that the accused had once been a registered medical practitioner; the fact that his name had been struck off the Medical Register (under Section 29 of the Medical Act) was thus disclosed, but was apparently explained by a statement that he had fallen foul of the medical authorities. Did this amount to giving evidence to establish his own good character? If so, it enabled the prosecution to cross-examine him as to a previous conviction in 1921 for administering drugs with intent to procure miscarriage. Starkie asked for leave to appeal on two grounds, one of which was that this cross-examination should not have been allowed.

The Criminal Evidence Act of 1898, which enabled accused persons to go into the witness-box and give evidence on their own behalf, enacted that. with certain exceptions, they must not be asked any question tending to show that they are of bad character or have committed, or have been convicted of, any offence other than that with which they are charged. One of the specified exceptions allows such questions if the accused has given evidence of his good character, or if the nature or conduct of the defence is such as to involve imputations on the character of witnesses for the prosecution. The scope of this exception is not easy to define. If a man accused of rape suggests that the prosecutrix consented, he can be cross-examined as to previous convictions. On the other hand, if the accused merely says that the prosecutor is a liar or complains that a constable, in arresting him, used improper violence, or alleges that the police have fabricated their evidence, these suggestions have been held not to justify cross-examination as to previous offences. In general, of course, those who administer criminal law in England are scrupulous in maintaining the principle that the fact that a man has committed one crime is not to be taken as evidence that he has committed another. In 1912 an appeal was allowed where a previous conviction had been elicited by questions put by the judge himself at trial while he was trying to help the accused to defend himself. In Starkie's case it might possibly have been argued that for him to give evidence of his name having been removed from the Medical Register amounted to establishing bad character rather than good. Apparently, however, it was taken to have involved an attempt to suggest that he was right and the General Medical Council was wrong. At any rate, Mr. Justice Goddard, in announcing the decision to refuse leave to appeal, said "in the opinion of the Court the applicant was rightly cross-examined as to his previous character because he had put his character in issue by stating that he had been a registered medical practitioner and had fallen foul of the Medical Association."

The other ground of Starkie's unsuccessful application was that the trial judge had not, in his summing-up, dealt fully enough with the defence. Starkie's defence was that he was treating a girl whom he did not know to be pregnant. The Court of Criminal Appeal ruled that the trial judge had fairly and fully put the case for the defence as well as the case for the prosecution. It was clear that there was evidence before the jury, which they were entitled to accept if they saw fit, that the girl had had a miscarriage and that an instrument had been used upon her. The only remaining question was whether Starkie was the person who used the instrument. The girl's evidence was corroborated, and there was abundant evidence on which the jury could find that the accused had committed the offence. The Court of Criminal Appeal does not sit to re-try cases. If the proceedings at the trial were in order, and there was adequate evidence on which the jury could find a verdict of guilty, and if the judge's summing-up reasonably covers the necessary ground and does not go wrong in stating the law, the appellate tribunal declines to interfere.

AUSTRALASIA

(FROM OUR OWN CORRESPONDENT)

TROPICAL DISEASE IN THE COMMONWEALTH

AUSTRALIA's tropical dependencies contain a larger purely white population than any other tropical country, and comprise an area of 1,332,320 square miles. In a presidential address to the section of medicine of the Australian and New Zealand Association for the Advancement of Science, which met in Sydney in August, Dr. R. W. Cilento pointed out that the Australian tropics are of the greatest importance to the Commonwealth because they are within easy striking distance of the world's largest endemic centres of small-pox, cholera, and plague, besides which there is the problem of malaria, dysentery, yellow fever, dengue, ankylostomiasis, and filariasis. Malaria seems to have been introduced by the Malays from the Dutch East Indies, and apparently there was no indigenous disease in the northern part of Australia during the early period of settlement. At a later period Pacific island natives were imported to work on the Queensland plantations and a large number of Chinese were introduced, and it was to this influx of aliens that Australia owed its tropical diseases. This is evidence, Dr. Cilento remarked, not so much of the unsuitability of the tropics for white men, but of the results that follow the introduction among them of a disease-ridden class of coloured indentured labour. The introduction of these aliens was discontinued when the White Australia policy was adopted.

Malaria occurs in the north-west and in two areas in Queensland. Although this is probably an unimportant part of Australia, there is a possibility of its becoming dangerous, Dr. Cilento thinks, should there be any sudden concentration of population in the endemic areas, or if hygienic control is slackened. Filariasis was probably introduced with Kanaka labour in 1863, and now 40–60 cases are admitted annually to the Brisbane Hospital, while it has been found that 15 per cent. of the patients in the surgical wards of the Brisbane Hospital are infected with microfilarial disease. Inland towns are apparently unaffected. Elephantiasis is very rare in Queensland, and as a result of the measures taken in treatment and prophylaxis the incidence of hookworm in that State had greatly decreased, so that it now appeared to be under control as far as the white population was concerned. Amongst the other diseases found in the north-eastern part of Queensland were typhoid, paratyphoid, endemic dengue fever, endemic typhus fever (Brill's disease). An increase in the number of known lepers in North Queensland and in the Northern Territory had taken place, and food-deficiency disease and trachoma were still to be found.

Experienced observers, Dr. Cilento said, have no doubt of the ability of white persons to adapt themselves to tropical climates, and the successful colonisation of tropical parts of Australia is essentially a problem of applied public health.

DEPOPULATION IN THE PACIFIC

Sir Hubert Murray, president of the Association, said that there is no evidence of any alteration during the last hundred years in the total population of Papua, of which he is Lieutenant-Governor. In the eastern and south-eastern divisions of the island, however, the population is known to be declining, and the fall is attributed, amongst other things, to a general shortage of food. He alluded to the belief among women that their children are killed by evil spirits, but spoke of a strong public opinion that there is something disgraceful in having a large family. Sir Hubert himself laid most stress on insufficient food-supply, sickness, and the passing of the old native customs. So far as Papua was concerned, it is expected that some tribes will die out altogether, but that the more resistant stocks will remain, and their natural increase will be more than sufficient to make up any loss.

In New Zealand, said Dr. Wi Repa, before the invasion by western civilisation, the Maori were a healthy race. The change from the old order to the new suddenly bridged a gulf of centuries, and the people found some difficulty in adapting themselves. War, pestilence, sterility, high infantile mortality, and the loss of ancestral lands caused such a decrease that at one time it was feared that the race would die out. But since the beginning of this century the Maori population has increased.

Dr. Cilento maintained that where the natives are only rarely visited by the white men they flourished, but the influence of contact with Europeans, with its restriction of many of the native customs, results for the most part in decline. Conditions in New Guinea have convinced him that the three main factors of depopulation are the heavy infantile death-rate, the considerable mortality at all ages from preventable diseases, and the fact the most of the people live on a borderline diet alternating between periods of plenty and periods of actual starvation. The various permanent causes in operation are introduced or aggravated disease (especially malaria or tuberculosis), bad sanitation, privation, and poverty of diet, and as a consequence lessened fertility with frequent miscarriage, deliberate abortion, and infanticide. The idea that a foreign race would revivify a weak or unhealthy population by introducing new blood is, he thinks, a fallacy. Dr. Raymond Firth discussed particularly the natives of the island of Tikopia, where the population tends to increase, but is limited by celibacy, contraception, abortion, and infanticide. Here epidemics occur only after the occasional visit of some vessel. Mr. E. W. P. Chinnery believed that intensive medical supervision, a properly organised scheme for infantile welfare, and the introduction of new plant foods would do much to reduce the mortality.

According to Mr. Burton, native policy in Australia has resulted in a decline of the aboriginal population from 300,000 in 1788 to 62,000 in 1930—or 80,000 if half-castes are included. He urged that caution and care should be exercised by Australia in her management of the races in the mandated territory.

RESUSCITATION IN DROWNING

In opening a discussion on resuscitation in drowning, Prof. H. Whitridge Davies said that tests showed that the Schafer method of resuscitation, as ordinarily applied, gives more than adequate ventilation of the lungs. He had investigated the extent to which dehydration occurred in drowning, and had found an increased salinity in the blood on the left side of the heart in animals drowned in salt water. The experiments strongly favour the giving of large quantities of water to patients after resuscitation. He also advises the administration of 5 per cent. carbon dioxide in oxygen during resuscitation, and demonstrated an apparatus which he had devised for this purpose. Dr. V. M. Coppleson said that on the Sydney beaches during the past four years in a large number of rescues, resuscitation had been necessary in 74 cases, and there had been 2 deaths. On country beaches there had been 146 resuscitations with 9 deaths. It was apparent that two kinds of training were necessary, according to whether the measures were to be taken by an isolated person or by one with ample assistance, as on the larger beaches. The rubbing of patients, as advocated by the Surf Life Saving Association and the Royal Life Saving Society, is, he said, an anachronism, and the covering of patients with warm blankets or clothing and drying them is of infinitely greater value.

The statement was made that one might expect an excess of carbon dioxide in the blood in drowning: to which Dr. C. H. Kellaway replied that during resuscitation there was excessive ventilation of the lungs. Hence its administration for a brief period might be useful.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE HOSPITAL PROBLEM

THE Government of the Irish Free State sprang a surprise last week on those who are interested in the hospitals, when Dr. Ward, Parliamentary Secretary to the Minister for Local Government and Public Health, announced that no more disbursements would be made from the sweepstakes funds until the whole hospital problem of the country had been studied, and that it was the intention of the Government to appoint a commission for the purpose. The announcement was made in the course of a debate on a private Bill, introduced by Mr. T. J. Murphy, a Labour Member for a division of County Cork. The object of Mr. Murphy's Bill was to ensure that hospitals benefiting from the sweepstakes would keep at least 25 per cent. of their beds for free patients. Hospitals cannot share in the benefits unless they are able to show that in the previous year they had kept 25 per cent. of their beds free or for patients paying less than 10s. a week, but there is no power at present to ensure that they should continue to do so, and the Bill was intended to remedy that omission. According to Mr. Murphy certain hospitals were refusing treatment to patients unless they could contribute at least £2 per week. Dr. Ward agreed that there was a class of people not entitled to free treatment, but who could not afford to pay the ordinary hospital charges, and the position in that regard was not satisfactory. He was of opinion that the best possible advantage had not been taken of the opportunity afforded by the sweepstakes. The different hospitals in competition with one another developed along parallel lines, and they were not securing the highly specialised accommodation and equipment that was looked for. That and other aspects of the matter had been given a considerable amount of attention, and it was intended to introduce a Government measure calculated to secure better results out of the moneys available. He added that it was not intended to make any further disbursements until the entire situation had been examined. The new legislation, which he promised, would set up a Hospitals Commission to review the hospital situation in the area of the Irish Free State and make recommendations as to the manner and amount of the allocations to be made in the future. He suggested the postponement of Mr. Murphy's measure, and this was agreed to after the Bill had been given a second reading. In the discussion, Mr. FitzGerald-Kenney, formerly Minister for Justice, and in that capacity responsible for the control of the earlier sweepstakes, hoped that an effort would be made in the direction of amalgamation of hospitals. Such a change would lead to greater efficiency and economy. He was certain that when the hospitals were in a position to do so they would deal generously with the poor, for the hospitals and boards of management were not out to make money, but to make ends meet. He drew attention to the needs of the middle class, and he hoped that the hospitals, when they could, would make a real attempt to meet their case.

Everyone must agree with the views of the Parliamentary Secretary that the best use has not been made of the opportunities provided by the sweepstakes. As the Committee of Reference pointed out, there has been no attempt to make a survey of the needs of the community and devise a system to meet those needs, and there has been no attempt to coördinate the activities of the several institutions. It is therefore natural that a commission should be appointed to bring order out of a threatened chaos. It might have been better if the hospitals had themselves asked for such a commission, but those charged with the management of the hospitals have unfortunately shown little appreciation of the magnitude of the problem, and have been content to continue and develop their work on traditional lines. There was, indeed, a danger that the endowments received from the sweepstakes, while relieving present necessities and providing improved accommodation and equipment, might have resulted in perpetuating an outworn system.

CONTROL OF THERAPEUTIC SUBSTANCES

The Minister for Local Government and Public Health of the Irish Free State introduced to the Dáil last week a Bill to regulate the manufacture, import, and sale of therapeutic substances, its short title being the Therapeutic Substances Bill, 1932. The substances enumerated in the schedule to the Bill are vaccines, sera, toxins, antitoxins, antigens, salvarsan and analogous substances, insulin, and pituitary preparations. The Bill provides that an advisory committee shall be appointed to assist the Minister in his duties under the Act. The advisory committee is to consist of ten members, one to be appointed by the Minister for Local Government and Public Health, one by the Minister for Agriculture, and one each by the following bodies: the University of Dublin, the National University of Ireland, the Medical Registration Council, the Royal College of Physicians of Ireland, the Irish Medical Association, the Veterinary Council, the Pharmaceutical Society of Ireland, and the Institute of Chemists. The Minister may declare any therapeutic substance, the purity or potency of which cannot be adequately tested by chemical means, to be a therapeutic substance to which the Act will apply. He may make regulations as to the standards of tests to be applied to such substances. No therapeutic substance to which the Act applies may be manufactured for sale or imported for sale except under licence from the Minister. A licence to import a therapeutic substance to which the Act applies will specify the names of manufacturers from whom the applicant imports, and will only be granted on the written undertaking of the manufacturer that he will comply with the conditions prescribed by the Minister. The right of a medical practitioner to prepare a therapeutic substance with reference to the condition, and for the use, of an individual patient is safeguarded. It is certainly desirable that the substances to which the Bill applies should be under some form of control in order to ensure purity and safety, and to guard against fraud, but there is a danger that the Act may place undue restrictions in the way of rapid importation of certain substances. At the present moment few, if any, of the substances are manufactured for sale in the Irish Free State.

PLAYING FIELDS OF THE COLLEGE OF SURGEONS

On Oct. 22nd Mr. F. C. Crawley, president of the Royal College of Surgeons in Ireland, declared open the pavilion and new playing fields of the College. The fields are about two miles from the College, with convenient bus service, and are some 16 acres in extent. They have been admirably laid out, under the supervision of Mr. Alfred Miller, registrar of the College, with accommodation for football and hockey for men and women. Tennis-courts and a swimming pool are to be added. The pavilions are roomy and well-equipped. Several distinguished guests, including the Lord Mayor of Dublin, were present at the opening ceremony.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. O. J. M. Kerrigan is placed on retd. list at his own request.

Surg. Comdr. (D) (retd.) H. M. Meek to be Surg. Capt. (D) (retd.).

Surg. Lts. G. A. Miller, T. B. Lynagh, and E. E. Malone to be Surg. Lt.-Comdrs.

The following appointments are notified: Surg. Lt.-Comdr. D. H. Kernohan to *Cambrian*, and Surg. Lt. P. M. McSwiney to *Pembroke*, for R.N.B.

ROYAL NAVAL VOLUNTEER RESERVE

Proby. Surg. Sub-Lt. G. F. Jones is confirmed in rank.

ROYAL ARMY MEDICAL CORPS

Maj.-Gen. O. L. Robinson, retd. pay, late R.A.M.C., is apptd. Col. Comdt., vice Lt.-Gen. Sir Charles H. Burtchaell, ret. pay, late R.A.M.C. (decd.).

INDIAN MEDICAL SERVICE

Lt. G. Milne to be Capt.

The probationary appts. of the undermentioned officers are confirmed. To be Lts.: E. H. Lossing, G. W. Miller, and D. G. McCaully.

ROYAL AIR FORCE

The undermentioned Flying Officers are promoted to the rank of Flight Lts.: S. C. Allen and F. F. Kennedy.

Flight Lt. C. F. Pitt relinquishes his temporary commission on completion of duty.

PANEL AND CONTRACT PRACTICE

ANNUAL PANEL CONFERENCE

THE annual conference of representatives of local medical and panel committees was held in the Great Hall of B.M.A. House on Oct. 20th, with Dr. H. C. JONAS (Barnstaple) in the chair.

Fees for Anæsthetists: Local Option

The question whether a practitioner who brings in a colleague to administer an anæsthetic should be reimbursed with the fee of that colleague has long been a matter of controversy. Following the I.A.C. model scheme, all areas provide in their distribution schemes that the fee shall be paid from the local practitioners' fund, and the amounts vary from two guineas to half a guinea, the large majority of areas paying one guinea. The opposition from various quarters has however been so strong that this year the I.A.C. decided to recommend the conference to delete this clause. Keen discussion was aroused.

Dr. G. J. B. CANDLER-HOPE (Yorks, N.R.) moved an amendment that the medical benefit consolidated regulations be altered to put the administration of anæsthetics outside the terms of medical benefit. He said that before the Act had come in, Yorkshire, anticipating that the money would come into the hands of a comparatively small number of practitioners, had decided not to admit claims for repayment of anæsthetists' fees. His committee had always contended that anæsthetics were a treatment outside the Act; under the contract the insured person was entitled to treatment from his panel doctor and not from two practitioners.

Dr. R. WARING TAYLOR (Oxon) said that in his county practitioners did this service for each other as "good pals." Formerly 100 per cent. of the claims had come from two people, and when seven years ago this had been realised, the committee had decided to have no more of it.

Dr. W. A. GREGG (London), while admitting the theoretical truth of Dr. Candler-Hope's proposition, pointed out its practical irrelevance, and the motion was lost.

Dr. A. N. FELL (Essex) then moved an amendment advocating that each panel committee should be given local option to pay or not to pay; this motion included the sense of another one by Surrey. He pointed out that in a county where men worked in partnership and staffed their own hospitals the fee might properly be paid; each panel committee could be trusted to keep its own men in order.—Dr. PETER MACDONALD (York), in support, maintained that this system would check all abuse and would leave areas like his own free to go on as they were going if they so desired.—Dr. R. L. E. DOWNER (Shropshire), discussing the suggestion that partners made most of the profit out of payment for anæsthetics, said that it was natural that partners should coöperate, and that it would be a great pity if there were not at least some advantage in having a partner. There was no reason, he said, why single-handed practitioners should not use this scheme to the full, nor why friendly colleagues—who existed in some places—should not come to a friendly arrangement to pool each other's proceeds.—Dr. A. LYNDON (Surrey) objected to the motion of the I.A.C., which he said had been carried by a majority of 3 members only in 29. Their resolution, he said, had merely voiced the London view. It would handicap the single-handed practitioner, and he hoped that the Essex amendment would succeed.

Dr. E. A. GREGG (London) complained that Essex was paying no attention to the needs of industrial areas like London, where people who had a commercially run practice exploited the scheme for what they could get out of it. He objected to having to contract out of the general arrangement that fees should be paid; committees which wanted to pay fees should, he considered, make their own domestic arrangements.—Sir HENRY BRACKENBURY (Chairman of Council) warned the conference that the I.A.C. had taken a muddled vote and that the conference should be careful to give a clear-cut vote on a clear-cut issue. The Essex proposition for local option might mean local option whether there should be any anæsthetic fee at all, or simply on what the fee should be. Did the conference wish to keep the status quo—the latter alternative—or to allow committees to abolish the fee altogether, or to fix a fee of 1s., as London had? The I.A.C. had voted for no fee at all as an alternative to fixing a fee of 1s.—i.e., reducing the fee to an absurdity.

Dr. N. W. RENTON (Kent) declared that his county had had Home Rule since 1066, when it had not surrendered, and it did not wish to be dominated by the London area. It had no clinics or hospitals to do its practitioners' work for them. A fee of 1s. would be a low form of commercialism, but a worse thing was the suggestion that one set of medical men would give anæsthetics merely in order to get a fee (A London representative: "It is true!"). It was not true in Kent, and if the profession had no means of checking the tendency within itself, Heaven help it!

Dr. A. BEAUCHAMP (Birmingham) pointed out that general practitioners wanted to keep as much work as possible in their own hands. He feared that if the motion of the I.A.C. were passed many men would send patients to hospital whom they could treat themselves. Local option would enable committees to cut out abuse; if they found that certain firms were getting too much they should cut them out—(A London representative: "How"?)—by reducing the fee to an unprofitable level.

Dr. JAMES ARTHUR (Northants), on the other hand, supported the resolution of the I.A.C. In 1928 his committee, perturbed by the large number of claims, had reduced the fee to half a guinea for gas and a guinea for other anæsthetics. The result had been a reduction in the total value but not in the number of claims. The figures on analysis had proved somewhat similar to those of London: single-handed practitioners had made only about 8 per cent. and more than half the claims had come from a small group of partnerships. Remonstrance had only increased the number of claims, and the committee had, therefore, this year asked for the deletion of the clause. It intended to proceed as it had for emergency treatment—by the friendly method of each practitioner helping his colleagues at need.

Dr. C. H. PANTING (Essex) wished to keep the option in the hands of the local committee, as he considered that it was very dangerous for committees to surrender power or responsibility. The anæsthetic fee only represented 0·6 per cent. of the whole of the pool; to abolish the fee would not be beneficial to the patient, and the committees could deal with exploitation by close scrutiny and, when they saw fit, by refusal to pay.

After Dr. S. P. HUGGINS (Bucks) had testified to how well his county got on without any claims, and Dr. FELL had emphasised that his motion was intended to empower a committee to refuse a fee, the Essex amendment was passed by a very considerable majority.

The Essex proposal for local option then came before the conference as a substantive motion, and an amendment was moved by Dr. Renton (Kent) to refer the matter back to the I.A.C.—Dr. Dain, however, vigorously opposed a reference back without a definite direction from the conference, and the amendment was withdrawn.—A motion by Dr. J. O. Summerhayes (East Sussex) to adhere to the status quo was defeated after strong opposition had been expressed by Dr. Gregg (London), whose committee object strongly to sitting in judgment on their colleagues in questions of treatment, and by Dr. P. Macdonald (York), who supported the Essex motion and pointed out how it would help London.—The conference was not even moved by the warning of Sir H. Brackenbury and Dr. L. J. Picton (Cheshire) that such a decision would make the Essex proposal mandatory on the I.A.C.—The principle of local option was then carried by a very large majority.

An Attractive Pension Scheme

Dr. Dain reminded the conference that it had often expressed the desire for a pension scheme for panel practitioners, and that as a result of a resolution passed by it in the previous year the I.A.C. had consulted persons familiar with group insurances and with the needs of medical men, and were now able to put forward a scheme which offered a series of benefits especially suitable to men in insurance practice. Exceptionally favourable terms had been obtained by limiting participation to three companies which had made the most acceptable offer. Their proposals were identical and the opportunities of enrolling members would be divided equally between them, but members would have free choice. Dr. Dain then moved a series of motions against invoking the assistance of the Government, against compulsory deductions from the quarterly cheques for premiums, and against monopoly by any one company.

Dr. Gregg (London) opposed the first motion on the ground that the time might come when the I.A.C., in bargaining with the Government, might find it very useful to accept a pension scheme instead of, for instance, an increase of 6*d.* in the capitation fee which the Government were unwilling to grant; the conference, however, agreed to the motion and also to the second proposition.—Dr. W. G. Thwaites (Brighton) feared that three companies might constitute a monopoly almost as considerable as one, but Dr. Dain pointed out that the companies concerned could only offer the present exceptionally generous terms if they were protected from further competition, and Dr. Thwaites withdrew the Brighton objection.

In reply to a question by Sir H. Brackenbury, Dr. Dain explained further that the I.A.C. had originally asked seven firms to tender, and that the other four had replied that they were not prepared to do this kind of business. A fourth company had offered to participate at a much later stage, but in fairness to the original three it had been excluded. He explained a few of the principal advantages of the scheme.[1] A medical examination would not, he said, be required in the ordinary way, but only for exceptional reasons. The chairman urged that the conference should not merely agree to the adoption of the policy by insurance practitioners, but that every member should vote. The conference thereupon adopted it, only one hand being raised in dissent

The Defence Trust

Mr. N. Bishop Harman (treasurer) announced that 71 per cent. of the quota (£250,000) had been subscribed, and in good-humoured but vigorous language praised the committees which had subscribed all or nearly all their contribution and criticised the laggards and disaffected.—Dr. Dain, in corroboration, sympathised with committees which frankly considered the trust useless, and promised to undertake persuasive measures, but strongly condemned areas which continued to profit by everything which the organisation offered, such as membership of the conference and electoral franchise, but would give nothing in return. He hoped, he said, to give reasons next year why each individual committee had refused to subscribe, and Dr. A. E. Larking (Hastings) expressed the view that refusal was generally due, not to any lack of public spirit, but simply to ignorance of the purposes for which the money was collected.

After the conference had adopted the report and accounts of the trust, Dr. Dain emphasised the importance of keeping the fund a live one and of not merely stopping when the first quota had been subscribed. He therefore moved that committees which had completed their quota should be asked to send further contributions in respect of those practitioners who had contributed for less than ten years, so that each would have contributed for that period.

Dr. J. E. Bates (Surrey) moved that committees that had completed their quota should not be asked to contribute further. He explained that as a private individual he disagreed entirely with this amendment, but that it had been carried through the Surrey committee by the overwhelming vote of the younger members.

Dr. T. S. Laird (Lanarkshire), however, agreed with Surrey's amendment. His committee, he said, had been one of the earliest to pay its full quota; it felt that those who had failed to contribute were being dealt with far too mildly. The I.A.C. would be surprised at the amount of money the local committees would put up if they really believed it was needed, but until the laggards came into line Lanarkshire would not send another penny.—Nevertheless, the Surrey amendment was defeated and the motion carried by a large majority.

The question of the ways in which the fund should be applied aroused considerable discussion. Dr. J. H. Cardale (London) moved that the profession should consider its policy concerning the future of the trust and define the purpose to which the funds should be applied.—Dr. Dain replied that he had been preaching for several years the importance of taking a big view of the fund, and of making it live and useful to members. A quarter of a million would be no use in a fight, but it was a nest-egg from which to start. In the case of real need he believed that Lanarkshire was right and that an unexpectedly large amount of money would be available, but it was necessary to enlarge the fund at the disposal of the trust and to spend its interest in wise and useful ways. The trustees could not accept dictation from any other body on the disposal of the fund, for they were responsible to deal with the money under the terms of the trust, but the voice of the panel committees would naturally be heard and might be paramount in the work. He suggested a reference to the trustees, who would issue a statement of policy in the coming year; and the London representative agreed.

It was not easy to understand the motives underlying the present views of the conference on the spending of the interest. It rejected the modest suggestion of the I.A.C. to spend £150 a year on lectures to medical students concerning their future duties as panel practitioners, although Dr. Dain and others pointed out the advantages of being able to employ locum tenents who would at any rate know the elements of panel prescribing and the keeping of panel records and would not be a continual source of anxiety. On the other hand, it agreed to the proposal of the I.A.C. to try for a year the policy of assisting the retirement of aged and infirm practitioners of very straitened means against whose work a complaint had been made.

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[1] See The Lancet, Sept. 3rd, p. 537.

It considered, however, that the fund might suitably be employed to anticipate the extension by the State of the national health medical service for dependents. East Sussex, in the person of Dr. SUMMERHAYES, moved a resolution that the I.A.C., in collaboration with the B.M.A., should urge and assist in the effective development of coördinated public medical and similar services, where necessary by means of loans from the trust income, and report progress to the next conference. Dr. Summerhayes told the conference that the motion had originated with Dr. R. Fothergill. The profession, he thought, should be in a position to oppose any State scheme to which it objected, and it could only do so if it already had an alternative in full working order. The difficulties were apathy, lack of time, lack of money, and lack of experience; if the I.A.C. and the B.M.A. appointed a subcommittee to conduct the scheme, these objections would be met. The scheme should be linked up with all others in existence. In this way the family doctor, who alone knew the patients, would be in full and continuous charge of them. There was still time for the profession to protect itself, but if the State were to move to-morrow, the profession would be "in the soup."

Sir HENRY BRACKENBURY outlined the work of the B.M.A., with which he said the matter chiefly rested. He suggested that the motion did not fully state the reasons for this important movement, and suggested a change in the wording:—

> "That, in order that the medical profession may be in a better position to assist in the formulation at the appropriate time of a satisfactory scheme for the extension of the National Health Service for the dependents of insured persons and others of like economic status, the trustees of the National Insurance Defence Trust be requested to collaborate with the British Medical Association in assisting the effective development of public medical services."

The policy of the I.A.C. was, he said, the extension of an insurance scheme to dependents. These services were not being set up to combat that policy, but in order to meet the immediate requirements of the people concerned and as a means of gaining experience and of ascertaining the features which ought to be embodied in a national scheme. This resolution was adopted by the conference without further discussion.

Other Business

The chairman of the conference was elected its representative on the new conjoint committee of Epsom College.

The conference agreed with acclamation to a motion by Warrington that no further deductions from the capitation fee should be accepted, and that the fee of 9*s.* should be restored as soon as circumstances permit. Dundee moved that no extension of range of service should be accepted without increased remuneration, but the conference shared Dr. Dain's view that a general practitioner must do the best for his patients whether they were private or insured, and the motion was withdrawn.

CORRESPONDENCE

THE POLICY OF SCHOOL-CLOSURE

To the Editor of THE LANCET

SIR,—In your leading article (last week, p. 903) on the closing of Stowe you rightly give first place to the interests of the community in general, while admitting that the school was most concerned with the particular interests of its boys. I should like you to know, however, that the school was by no means indifferent to the interests of the community. The memorandum which I sent to all parents on the dispersal of the school contained the following passage:—

> "The dispersal of the school may seem to involve some danger to the community. But this will not be so if two conditions are fulfilled: (1) that every boy shall be kept away from intimate contact with other young people for three weeks from the day he leaves here; (2) that the local medical officer of health shall be informed at once of the boy's arrival in his area.
>
> "I earnestly hope that these two conditions will be loyally observed."

In addition a letter from the school medical officer to the home doctor was sent to every household.

The collection of information about any cases of poliomyelitis which may occur in houses to which Stowe boys have returned this month should not be a difficult task, and I fully realise its importance. We shall be happy to cooperate in any inquiries which the Ministry may wish to set on foot.

It should be remembered by our medical critics that even in the interests of the community no school can forcibly retain its boys if their parents wish to remove them.

I am, Sir, yours faithfully,

J. F. ROXBURGH,
Headmaster.

Stowe, Buckingham, Oct. 24th, 1932.

⁂ The Ministry of Health have now given the needed guidance. In a circular dated Oct. 24th, it is stated that the Ministry have received certain inquiries as to the wisdom or expediency of closing residential schools in which isolated cases of poliomyelitis may have occurred. "The Ministry," it says, "are definitely of the opinion that the balance of advantage is in favour of *not* closing a residential school in which poliomyelitis has appeared. If the school be closed any potential infectiousness of the disease is more widely distributed, and passes beyond such means of supervision and control as are furnished in a well-equipped residential school conducted on hygienic lines."—ED. L.

INSULIN AND THE B.P., 1932

To the Editor of THE LANCET

SIR,—The authorities responsible for the British Pharmacopœia, 1932, have made it far from easy for the dispensing chemists to fill prescriptions for insulin. If the prescription reads "Insulin B.P. 100 units. Half a cubic centimetre to be injected twice daily," the chemist has no difficulty; he must supply one of the many brands of insulin containing a preservative. Should the prescription, however, read "Insulin

B.P. 100 units. To be used as directed," he seems to be at liberty to supply the cheapest insulin, even if it does not happen to have any preservative added. The reason he may do this is the fact that there is no indication in the prescription that the dose is not 100 units. The B.P. reads (p. 232):—

> "If it is distributed into sealed ampoules, each of which contains one dose only, an antiseptic need not be added."
>
> "The containers are either sealed glass ampoules, each of which contains an amount intended to be used as one dose, or glass phials, each containing a larger volume and sealed so as to allow the withdrawal of successive doses on different occasions."
>
> "Doses: By subcutaneous injection. 5 to 100 Units."

The word "sealed" is used when the container is closed with a rubber cap, and therefore need not mean that the ampoule must be made entirely of glass. Again, insulin in solution according to the B.P. must be such "that the solution contains 20 Units per millilitre," and therefore a prescription for insulin containing 40 units or 80 units per millilitre cannot be filled with a preparation included in the B.P.

The question arises as to the circumstances which led the Pharmacopœia Commission to insist upon preservative being added to the solution when packed economically. I imagine that the Therapeutic Substances Act influenced it to some extent. That Act reads:—

> "When any therapeutic substance is issued in liquid form in containers which are sealed in such a manner that portions of the contents can be withdrawn for use on different occasions the liquid shall contain a sufficient proportion of some antiseptic to prevent growth of any organism which may be accidentally introduced in the process of removing a portion of the contents of the container."

The Act was to put into force a finding of a Commission appointed to inquire into a disaster caused by pathogenic micro-organisms growing in a bottle of antitoxic serum. Lawyers assert that legislation for "hard luck" cases results in bad law. Perhaps rules designed to prevent disaster following carelessness may do more harm than good; they may save a life or two and damage many. As far as insulin is concerned the substitution of the word "antiseptic" by the word "substance" would allow insulin to be supplied without antiseptic because the acid in the solution prevents the growth of organisms. The alteration would not benefit patients suffering from Addison's disease, Addison's anæmia, diabetes insipidus, tetany, &c.; the extracts which are necessary for them would still have to contain antiseptic if packed economically. We have no evidence that preservatives do not destroy the active principles in these extracts, and it may take years to obtain evidence.

It seems extraordinary that a State which prohibits preservatives being added to food should insist on preservatives being added to therapeutic substances for injection when packed economically. Drs. W. W. Payne and A. G. Signy showed that insulin in solution with a pH 4·0 not only prevented the multiplication of *Bacillus coli* and *Staphylococcus aureus* but actually destroyed them. It had been asserted that when insulin became a medium in which micro-organisms could grow, it became cloudy owing to precipitation of the insulin upon the pH being raised, and therefore if patients were advised to use insulin only when water-clear, there would be no risk of their injecting a suspension of micro-organisms.

Dr. P. Hartley investigated the conditions upon which a solution might be rendered a culture medium for staphylococci. He added 920 freshly grown and presumably vigorous cocci, suspended in 25 cubic millilitres of broth, to 5 c.cm. insulin, to which he added varying quantities of alkali. It might have been a more convincing experiment if he had used a suspension in distilled water and not contaminated the insulin with peptones, even in small quantities. He found that if alkali was added to alter the pH from 4 to 8·3 the solution might become clear and allow cocci to grow for a time. The solution would pass through a cloudy stage if the alkali were added in successive doses.

Now that the majority of diabetic patients keep their syringes in spirit and do not boil them in water, the possibility of introducing alkali is removed. Since more than a million units of insulin in solution without added antiseptics are used daily in Europe, obviously the opinion that the addition of antiseptic should be added is far from universal. Some members of the staffs of many hospital take the view that the risk of infection from not adding antiseptic is smaller than the risk of damaging the patient by injecting antiseptic, and therefore, at a very large number of institutions, solutions of insulin are used which cannot be described as Insulin B.P. Amongst these are Guy's, Great Ormond-street, the London Hospital, and Middlesex Hospital. This does not seem a commendable state of affairs.

I am, Sir, yours faithfully,

O. LEYTON.

Portland-place, W., Oct. 23rd, 1932.

PROFESSIONAL SECRECY

To the Editor of THE LANCET

SIR,—It is unfortunate that, when the question of professional secrecy arises, there is often some charge against a medical man or it is claimed that evidence is being withheld which is essential for the administration of justice. The issue consequently becomes confused; and it appears as if secrecy is to the advantage of medical men, whereas it is entirely to the advantage of the patient; and the medical profession is concerned because, unless secrecy is safeguarded, the practice of medicine becomes increasingly difficult. It is the custom of judges in some local courts to demand the production of insurance cards kept for panel patients when an application is made for compensation. Protests by medical men have been made from time to time, but these have been overruled. Unless the card is produced the claim of the applicant is rejected. The dangers will be appreciated from the following case:—

A miner, a widower aged 48, had a fracture of the left femur in 1927. This had united with two inches shortening and an ankylosed knee. He was paid partial compensation and worked as an ostler underground until this year. The pain became worse and he stopped work. His claim for full compensation was refused by the company and the case was taken to court. The point at issue was whether it was fair to ask such a man to walk 1000 yards underground. I appeared for the applicant. The applicant's doctor when giving evidence had to produce the insurance card, which was handed to the respondent's solicitor. It was then revealed that this man had contracted gonorrhœa two years previously. The whole history was then gone into. Though the doctor and myself were quite definite that this man was cured and that the condition of the left leg had nothing to do with gonorrhœa, it did not in any way prevent a very active cross-examination as to its relationship to gonorrhœal rheumatism, in which the judge himself participated. The respondent's doctor admitted that he did not consider the state of the left leg had anything to do with gonorrhœa. The question of venereal disease had been raised by the solicitor merely to damage the character of the applicant in the eyes of the judge and to obscure the issue. This miner's application was before the court merely because he had worked in a dangerous occupation and had suffered the effect of the danger. As a result an incident in his life was revealed in open court in front of many people from his district and, I believe, a grown-up son and daughter.

In the solicitors' room afterwards contempt was expressed for this solicitor, for the judge who had allowed such an abuse to occur, and for the medical profession who have made no effort to safeguard their patients; for this practice has been going on in the courts for a number of years. As a result patients will no longer consult medical men about venereal disease and will prefer to remain untreated. In addition, that confidence between a medical man and his patients which is so essential can no longer exist when information is so easily revealed.

The profession should not be content to let matters drift. The protests that have been raised amount to no more than a gesture, and our failure to make a stand for medical privileges has damaged our prestige.

I am, Sir, yours faithfully,

Cardiff, Oct. 15th, 1932. T. E. HAMMOND.

CONSTIPATION WITH INCONTINENCE

To the Editor of THE LANCET

SIR,—I was much interested to read in this week's issue of THE LANCET (p. 927) an abstract of a paper by C. E. Bloch, of Copenhagen, describing this condition of constipation with incontinence of fæces occurring in children. It seems probable that now this syndrome has been observed and reported similar cases will be published in this country. In the summer of this year a surgical colleague of mine at the Derbyshire Hospital for Sick Children, Mr. H. A. Lavelle, passed on to the medical ward for treatment a girl of 11 who had all the characteristic clinical features described by Bloch. She had been referred to hospital for incontinence of fæces (unaccompanied by urine) of gradual onset and increasing frequency; incontinence had been present for several months, and on admission she was passing, several times a day and completely uncontrolled, a motion that was normal in colour and consistence. Discipline and disgust at home had resulted in such shame and timidity as to suggest to the house surgeon the appearance of a mental defect. The anal sphincter was relaxed, and immediately after defæcation the rectum was still filled.

The girl showed some clinical findings not referred to in your abstract. The abdominal musculature was strikingly thin, and scybalous masses could be felt stretching across the abdomen like a string of large oval beads. She was given charcoal by mouth, and we were astonished to find it appearing at the anus within 18 hours. The condition was obviously one of retention with overflow, the overflow consisting for the most part of fresh daily residue which had managed to slip past the obstructing scybalous masses. At first she was treated with simple enemata; these were soon discovered to be useless and it required several days of colonic lavage before the whole colon was cleared. Each day the removal of a few inches of fæces could be made out by abdominal palpation. Then with the help of abdominal exercises and a stimulating aperient (aloes and nux vomica), she resumed a daily habit of defæcation and with its resumption she became a normal and happy child.

This treatment appears to be more rapid and more rational than that outlined by Bloch, and this fact—together with the rarity of the condition and the small additions to the clinical picture which we were able to make—has prompted me to send you this account. I am, Sir, yours faithfully,

Derby, Oct. 21st, 1932. DOUGLAS HUBBLE.

HUMAN AND BOVINE TUBERCULOSIS

To the Editor of THE LANCET

SIR,—In his presidential address to the Hunterian Society reported in your last issue (p. 900) Dr. Nathan Raw propounds some interesting queries on the subject of tuberculosis which probably can only be answered by clinical results and not by laboratory methods. A few conclusions I have arrived at are these. In the first place I have never failed to find the carrier in all private cases and likewise in many dispensary cases. The carrier is invariably the nurse which in most instances is the mother who may have been infected by the father, and in no case has milk even been suspected. One of my little boys acquired the infection from a nurse whilst I acquired it from dispensary patients. In both instances removal from the source completed the cure. Tuberculosis in children under 12 whether glandular, pulmonary, or abdominal is best treated by bovine tuberculin (P.T.O.), Koch's old tuberculin being practically useless. Patients over 12 receive benefit from the latter form of tuberculin whilst P.T.O. is of no use. These results lead one to the belief that the bovine type of tubercle bacillus finds young tissue a suitable soil whilst the human type lives only on older tissues. This seems feasible as cows rarely live more than 12 years. Though the bovine type is only (with certain exceptions) found in children, good results can be obtained to the children by treating the carrier or carriers with the human type of tuberculin. It is an everyday experience to find several types of tuberculosis in a tuberculous family of brothers and sisters.

I am, Sir, yours faithfully,

Buxton, Oct. 24th, 1932. R. CRAWSHAW HOLT.

SUBCUTANEOUS RUPTURE OF THE POPLITEAL ARTERY

To the Editor of THE LANCET

SIR,—Two cases of rupture of the popliteal artery are recorded by Mr. C. P. G. Wakeley and Mr. W. Ogilvy Reid in THE LANCET of Oct. 15th (p. 829); in each case the rupture was due to an injury, the lesion was just below the opening in the adductor magnus, and amputation of the thigh was performed within 30 hours of the accident. They could find a record of only four similar cases since the war, but were convinced that the condition was "not so rare as the number of recorded cases would lead one to expect." It may be of interest, therefore, to give a brief account of a case of perforation of the artery in the neighbourhood of the foramen in the adductor magnus, in which the onset and progress of the symptoms were much more gradual, and ligature of the artery instead of amputation was resorted to.

The patient, a man of about 70, was knocked down by a cyclist on June 4th, 1918. On the 18th he complained of a painful swelling in the right thigh over Scarpa's triangle, for which he consulted Dr. G. J. Conford, of Felixstowe, to whom I am indebted for notes of the case. Dr. Conford looked upon it at first as phlebitis. By the 26th the swelling in the thigh had considerably increased, was fairly hard and fixed, with slight but definite pulsation perceptible on palpation. I saw him in consultation on this day, and considered it to be a rapidly growing sarcoma, for which I advised immediate amputation. During the next few days the swelling of the thigh increased very rapidly, accompanied by severe pain, and he decided to submit to operation on July 2nd, a fortnight after the symptoms were first noticed.

At the operation the limb was found to be very greatly swollen and cyanic, and it was evident that there must have been very considerable hæmorrhage into the tissues. Instead of proceeding to amputation as was originally proposed, an incision was made over the femoral artery. Much clot was removed, and the artery tied at the apex of Scarpa's triangle. The incision was prolonged downwards along Hunter's canal, masses of clot being cleared away, and the artery followed to the foramen in the adductor magnus where a circular perforation about 5 mm. in diameter was found. The artery, which was atheromatous and calcareous in places, was ligatured above and below the perforation and the wound closed. The vein was not interfered with. The patient made an uninterrupted recovery, and was walking about within a few weeks. He died about five years later from pulmonary disease.

I am, Sir, yours faithfully,
HERBERT H. BROWN, F.R.C.S.
Ipswich, Oct. 21st, 1932.

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SIR,—In an annotation on the early differential diagnosis between amœbic and bacillary dysentery in your issue of Oct. 15th (p. 853) mention is made of the secretion of a proteolytic ferment in *E. histolytica*, suggested by J. Anderson in 1921 and again by A. Alexieff in the present year. There are to my mind weighty reasons—phylogenetic, systematic, and biological—for doubting that amœbæ give off such a ferment. The sole instance among the protozoa in which digestive ferments are known to be passed out of the body is in the case of the suctorial acinetaria, where (as is always the case) they are secreted by the nucleus, which has finger-like extensions prolonged towards the tentacles. In no entamœba is there any suggestion of extracellular digestion, and the secretion of a proteolytic ferment implies far too great a phylogenetic jump. Even in the intracellular sporozoa there is no evidence of any "external" secretion of digestive ferments. In the malarial parasites, for instance, the resident product of digestion, the pigment is formed only in the cytoplasm of the parasite, never in the more or less used-up red corpuscle.

It must be remembered that the ectoplasm of *E. histolytica* is peculiarly well developed, tough, and mobile. When the penetration, by mobility of relatively delicate things like the germs of coccidia actually into the epithelial cells of the intestine is considered, there is no difficulty about the ectoplasmic pseudopodia of *histolytica* being able to bore or scrape a way inwards. Phylogenetically the extracellular secretion of digestive ferments undoubtedly began in the flagellates where at the base of the stomodæum the endoplasm is for a small area uncovered by the delicate investing cuticle. The different type of histolysis occurring in an amœbic ulcer from that to be seen in the submucosa in bacillary dysentery is probably explainable by the invasion of ordinary intestinal bacteria, which are more or less swept away in heavy infection with dysenteric bacilli.—I am, Sir, yours faithfully,

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Drugs and Pharmaceutical Preparations

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(Park Royal, N.W.), drew attention to "Collosol" halibut-liver oil, which they claim to be the only natural preparation of this oil, entirely free from all solvents and ergosterol; also "Karvol," an antiseptic for the upper respiratory tract, which is active in the presence of serum.—(140, 150, 160) Evans Sons Lescher and Webb, Ltd. (56, Hanover-street, Liverpool), showed "Hepatex I-M," a liver extract for intramuscular injection. They also displayed "E.D.P.," a bismuth formic-iodide dusting powder for skin conditions.—(70) Fassett and Johnson, Ltd. (St. John's Gate Buildings, 86, Clerkenwell-road, E.C.), had on view anti-rheumatic seaweed salts for use in the bath at home. They also pointed out that they now supply "Eatan" in an orange-flavoured jelly, each cube containing a full dose.—(11) Genatosan, Ltd. (Loughborough, Leicestershire), selected from among their well-known products, "Sanatogen," "Genasprin," and vaccines, a nasal spray of anti-catarrh vaccine as a preventive of colds.—(95, 96, 109) Glaxo Laboratories (56, Osnaburgh-street, N.W.) drew special attention to their "Adexolin" vitamin capsules, and to an anti-virus preparation which can be applied externally.—(121) C. J. Hewlett and Son, Ltd. (35–42, Charlotte-street, E.C.), showed their useful General Practitioner's, Midwifery, and Surgeon's bags, and also Baron's portable lithotomy support. Their many pharmaceutical preparations, particularly *Pil. digitalis pur.*, were on show. They also showed trusses and appliances in their capacity as makers to the City of London Truss Society.—(71) The Hoffmann-la Roche Chemical Works, Ltd. (The "Roche" Laboratories, 51, Bowes-road, N.), exhibited "Ovobrol," a new compound of their well-known "Sedobrol" sedative with bromide; and "Prostigmin," an intestinal stimulant for use after operations.—(45) Howards and Sons, Ltd. (Ilford), had a charming little green and white replica of an old-fashioned chemist's shop, in which they showed their many preparations, particularly "Quinisan," a new quinine salt, and "Agotan" for rheumatism.—(122) Johnson and Sons, Ltd. (Hendon Way, Hendon, N.W.), showed "Arvitin," a silver preparation; lysol guaranteed to contain 50 per cent. cresols; and "Elixir Casc. Aromat.," a palatable preparation.—(137) J. F. Macfarlan and Co. (32, Bethnal Green-road, London, E.) picked out, from among their anæsthetic agents, "Brisettes," capsules containing 20 mins. of chloroform for use in childbirth.—(99) May and Baker, Ltd. (Battersea, S.W.), exhibited among their preparations "Estriol," a preparation of 40 per cent. iodine in an ester of poppy-seed oil for the radiography of small cavities.—(103) H. R. Napp, Ltd. (3–4, Clement's-inn, W.C.), drew special attention to their "Xorox"; their bromide preparation, "Multibral"; their "Raminal," for anæmia and debility; and also their "Glucator," a simple apparatus for rapid and accurate estimation of sugar in the urine.—(42) National Drug Industries, Ltd. (Emmott-street, E.), the makers of "Petrolax," showed "Peldo," a protective ointment which is proving valuable in cases of industrial dermatitis.—(39) Paines and Byrne, Ltd. (31, Southampton-street, W.), had on view a gland preparation in capsule form for cases of dysmenorrhœa, "Pabryn-a-menotab."—(64) Parke, Davis and Co. (50–54, Beak-street, W.) featured "Haliverol," a preparation of oil of halibut fortified with "Viosterol," an irradiated ergosterol; this oil, they claim, is 60 times as potent in vitamin A as cod-liver oil, and 250 times in vitamin D; they also exhibited "Antuitrin-S," a solution of follicle-stimulating and luteinising hormone of the anterior pituitary.—(57) Pearson's Antiseptic Co., Ltd. (61, Mark-lane, E.C.), in addition to "Iodine-Medol" and Creolin, showed standardised lysol at half the price of the ordinary preparation.—(75) Petrolagar Laboratories, Ltd. (Braydon-road, N.), pointed out that their "Petrolagar" was now cheaper, and their "Neobovinine" pleasanter to the taste.—(46) The

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(Winchester House, E.C.), drew attention to their T.C.P.B. 3, a colloidal emulsion of their antiseptic, for gastro-intestinal troubles.—(140) The British Drug Houses, Ltd. (Graham-street, City-road, N.), exhibited crystals of pure vitamin D, as used in "Radiostol" solution and pellets; also a new concentrate of vitamin A of an activity equivalent to 50,000 blue units. Their preparation "Avoleum" is a simple solution of this concentrate in oil, and possesses an activity of 900.—(114) Burroughs Wellcome and Co. (Snow Hill Buildings, E.C.) drew attention to their tabloid "Diginutin" and their "Stipolac" tetraiodophenolphthalein in two tubes, one containing the salt and the other the acid mixture; the freshly precipitated substance is obtained by mixing the two compounds, and is claimed to obviate nausea. (1) G. W. Carnrick and Co. (232-240, Vauxhall Bridge-road, S.W.) had on view a preparation of liver extract for intramuscular injection, "Erythgen"; and also a new ovarian follicular hormone, "Thelestrin," each ampoule containing 25 Allen-Doisy rat units.—(63) Chesebrough Manufacturing Co. (Cons.) (Victoria-road, Willesden, N.W.) have taken over "Listerine," in addition to their well-known "Vaseline Capsicum" and "Pineoleum." The last they now market in a cheaper bottle with a nasal pipette in the cork.—(4) Continental Laboratories, Ltd. (30, Marsham-street, S.W.), have added to their well-known "Taxol" and "Lactobyl" a new mistletoe preparation for hypertension, "Detensyl."—(117, 118, 138) Crookes' Laboratories, British Colloids, Ltd. (Park Royal, N.W.), drew attention to "Collosol" halibut-liver oil, which they claim to be the only natural preparation of this oil, entirely free from all solvents and ergosterol; also "Karvol," an antiseptic for the upper respiratory tract, which is active in the presence of serum.—(140, 150, 160) Evans Sons Lescher and Webb, Ltd. (56, Hanover-street, Liverpool), showed "Hepatex I-M," a liver extract for intramuscular injection. They also displayed "E.D.P.," a bismuth formic-iodide dusting powder for skin conditions.—(70) Fassett and Johnson, Ltd. (St. John's Gate Buildings, 86, Clerkenwell-road, E.C.), had on view anti-rheumatic seaweed salts for use in the bath at home. They also pointed out that they now supply "Eatan" in an orange-flavoured jelly, each cube containing a full dose.—(11) Genatosan, Ltd. (Loughborough, Leicestershire), selected from among their well-known products, "Sanatogen," "Genasprin," and vaccines, a nasal spray of anti-catarrh vaccine as a preventive of colds.—(95, 96, 109) Glaxo Laboratories (56, Osnaburgh-street, N.W.) drew special attention to their "Adexolin" vitamin capsules, and to an anti-virus preparation which can be applied externally.—(121) C. J. Hewlett and Son, Ltd. (35–42, Charlotte-street, E.C.), showed their useful General Practitioner's, Midwifery, and Surgeon's bags, and also Baron's portable lithotomy support. Their many pharmaceutical preparations, particularly *Pil. digitalis pur.*, were on show. They also showed trusses and appliances in their capacity as makers to the City of London Truss Society.—(71) The Hoffmann-La Roche Chemical Works, Ltd. (The "Roche" Laboratories, 51, Bowes-road, N.), exhibited "Ovobrol," a new compound of their well-known "Sedobrol" sedative with bromide; and "Prostigmin," an intestinal stimulant for use after operations.—(45) Howards and Sons, Ltd. (Ilford), had a charming little green and white replica of an old-fashioned chemist's shop, in which they showed their many preparations, particularly "Quinisan," a new quinine salt, and "Agotan" for rheumatism.—(122) Johnson and Sons, Ltd. (Hendon Way, Hendon, N.W.), showed "Arvitin," a silver preparation; lysol guaranteed to contain 50 per cent. cresols; and "Elixir Casc. Aromat.," a palatable preparation.—(137) J. F. Macfarlan and Co. (32, Bethnal Green-road, London, E.) picked out, from among their anæsthetic agents, "Brisettes," capsules containing 20 mins. of chloroform for use in childbirth.—(99) May and Baker, Ltd. (Battersea, S.W.), exhibited among their preparations "Estriol," a preparation of 40 per cent. iodine in an ester of poppy-seed oil for the radiography of small cavities.—(103) H. R. Napp, Ltd. (3–4, Clement's-inn, W.C.), drew special attention to their "Xorox"; their bromide preparation, "Multibral"; their "Raminal," for anæmia and debility; and also their "Glucator," a simple apparatus for rapid and accurate estimation of sugar in the urine.—(42) National Drug Industries, Ltd. (Emmott-street, E.), the makers of "Petrolax," showed "Peldo," a protective ointment which is proving valuable in cases of industrial dermatitis.—(39) Paines and Byrne, Ltd. (31, Southampton-street, W.), had on view a gland preparation in capsule form for cases of dysmenorrhœa, "Pabryn-a-menotab."—(64) Parke, Davis and Co. (50–54, Beak-street, W.) featured "Haliverol," a preparation of oil of halibut fortified with "Viosterol," an irradiated ergosterol; this oil, they claim, is 60 times as potent in vitamin A as cod-liver oil, and 250 times in vitamin D; they also exhibited "Antuitrin-S," a solution of follicle-stimulating and luteinising hormone of the anterior pituitary.—(57) Pearson's Antiseptic Co., Ltd. (61, Mark-lane, E.C.), in addition to "Iodine-Medol" and Creolin, showed standardised lysol at half the price of the ordinary preparation.—(75) Petrolagar Laboratories, Ltd. (Braydon-road, N.), pointed out that their "Petrolagar" was now cheaper, and their "Neobovinine" pleasanter to the taste.—(46) The

Pharmaceutical Corporation, Ltd. (39–40, Aldersgate-street, E.C.), drew attention to "Novaseptic," a powerful germicide containing the bacterial ingredients (quinotoxins and benzoic acid) of their well-known "Novutox" local anæsthetic.—(155) Reed and Carnrick (94, Clerkenwell-road, E.C.) showed their enteric-coated "Thyracoids," containing iodothyroglobulin. They claim that these are the only physiologically standardised thyroid.—(58) Research Products, Ltd. (12–13, Henrietta-street, W.C.), demonstrated mineral vitamin tablets containing copper, iron, iodine, and yeast; and also "Pyrolactin," a standardised and filtered milk for intramuscular injection, with or without vaccines.—(147) Sandoz Chemical Works (5, Wigmore-street, W.), in addition to their well-known preparations, showed "Partagon Bougies," providing a compound of colloidal silver chloride and sodium silver chloride formed in an aqueous medium, for the treatment of venereal disease.—(27, 28) Savory and Moore, Ltd. (143, New Bond-street, W.), among their wide range of preparations, showed "Urotropal," a urinary antiseptic, especially for diseases arising from excess of uric acid; "Laxaloids"—glandular extracts with agar-agar; and "Laxarol," a paraffin emulsion with agar-agar, phenolphthalein, and carminatives.—(47) Schering, Ltd. (3, Lloyds-avenue, E.C.), gave prominence at their stand to their most recent products: "Progynon," for secondary amenorrhœa and climacteric disturbances; "Neotropin," a urinary antiseptic for oral use; "Solganal," gold products and Uroselectan B.—(146) Sharp and Dohme, Ltd. (252, Regent-street, W.), exhibited their "Solution S.T. 37," a new antiseptic of low surface tension, for which they claim exceptional penetration; also a concentrated preparation of Felton's serum for lobar pneumonia.—(125) E. H. Spicer and Co., Ltd. (Endocrines, Ltd., Watford), introduced "Haliver Oil" with ergosterol, a halibut oil with a high percentage of vitamins A and D, manufactured in Montreal.—(85) Vitamins, Ltd. (23, Upper Mall, W.), had on view "Bemax" chocolate, which has been considerably improved in taste. This attractive sweetmeat contains 20 per cent. of "Bemax," and therefore a large proportion of vitamin B.—(10) White's Laboratories, Ltd. (Bush House, W.C.), illustrated cinematographically their method of preparing a tested and standardised preparation of the non-saponifiable fraction of cod-liver oil, which is dispensed in tablets flavoured with oil of wintergreen.

Surgical Instruments and Appliances

(26) Bruce, Green and Co., Ltd. (14–18, Bloomsbury-street, W.C.), directed attention to a new ophthalmological trial frame mounted on a bracket, with full range of adjustment.—(3) Cameron's Surgical Specialities, Ltd. (40, Langham-street, W.), have made their well-known diagnostic sets more durable.—(6) J. and A. Carters, Ltd. (125–129, Great Portland-street, W.), showed an improved dry bed for incontinent patients.—(145) Clement Clarke, Ltd. (16, Wigmore-street, W.), showed their "Synoptophore," a new and accurately calibrated apparatus for curing all degrees of squint.—(141) Stanley Cox, Ltd. (39, Gerrard-street, W.), had on view the "Autogram" portable X ray set, complete with 2½ kw. "Metalix" tube for operation at 70 kv., with a maximum current of 10 ma. It has complete range of adjustment.—(30) C. W. Dixey and Son, Ltd. (19, Old Bond-street, W.), showed a new British slit-lamp apparatus at a price much below that of the cheapest continental lamps.—(18) Theodore Hamblin, Ltd. (15, Wigmore-street, Cavendish-square, W.), had on view a full range of reading glasses; and "Spotlight" spectacles: a small focusing lamp fixed to the bridge of the spectacle frame.—(33) T. Hawksley, Ltd. (351, Oxford-street, W.), among their extremely long range of appliances for the deaf, displayed the new model of the Marconi Otophone, which amplifies by the ordinary wireless methods, giving an exceptionally loud reproduction for very deaf subjects.—(2) Holborn Surgical Instrument Co., Ltd. (26, Thavies-inn, Holborn Circus, E.C.), in addition to their instruments, drew attention to "Armour-plate" unbreakable glass for tables and shelves.—(110) The Inhaling Drug and Apparatus Co., Ltd. (87, Eccleston-square, S.W.), drew attention to their British-made "Apneu" Collison inhaler, an improved and simplified form of their original Spiess-Dräger inhalation apparatus.—(142) C. Davis Keeler (47, Wigmore-street, W.) drew special attention to the "Decagon," which they claim is the only automatic refraction unit in existence. It gives an automatic reading of the points of refraction error. It is British made, and provides a quick and entirely new and convenient method of diagnosing and measuring astigmatism.—(156) Medical Surgical Sundries, Ltd. (97, Swinderby-road, Wembley), exhibited their "Esseff" inhaling apparatus; also an oiled-canvas first-aid wallet in a red metal cylinder, for the car.—(24) W. H. Pettifor (11, Victoria-street, S.W.), among his various aids for the deaf, showed a hearing-tube with a stethoscope microphone which is placed over the speaker's trachea while the earpiece goes in the deaf person's ear; the sound is amplified, while at the same time the speaker's lips are left perfectly visible.—(86) Radium Electric, Ltd. (24, Grosvenor-gardens, S.W.), exhibited their "Q-Ray" Electro-Radium-Compress. These pads are now obtainable in different radio-active strengths up to 0·092 mg. radium element.—(23) Rayner and Keeler, Ltd. (100, New Bond-street, W.), showed a transparent protractor in the form of a roller blind for rapidly and accurately transferring the boundaries of a scotoma from the Bjerrum screen to a chart.—(12) W. J. Rendell, Ltd. (161–165, Rosebery-avenue, E.C.), by means of an analytical quartz lamp, showed the perfect distribution of quinine throughout their pessaries.—(62) A. G. Sheldon and Co., Ltd. (59, Weymouth-street, W.), have added to their useful range of drums an assortment of sterilised dressings done up in cardboard cartons and costing only 2*s*. 6*d*. and 1*s*. 6*d*.—(157) Sparklets, Ltd. (London, N.18), showed a resuscitator for the administration of carbon dioxide, oxygen, or both; Sparklet bulbs are inserted into a light metal holder, and each bulb gives six minutes' supply of gas at an optimim rate of 2 litres per minute. They also showed an apparatus for producing solid carbon dioxide.—(101) The Surgical Manufacturing Co., Ltd. (83–85, Mortimer-street, W.), emphasised a smaller and cheaper sphygmomanometer, and a diagnostic set which can be connected to the main supply.—(16) The Wilson Rubber Co., Ltd. (85, Buckingham-avenue, Slough, Bucks), has been formed to meet the demand for British-made rubber gloves. It was founded under the supervision of the American Wilson Rubber Co., the largest manufacturers of rubber gloves in the world, and is now importing highly skilled workmen to turn out the gloves and employing British potters to make the forms on which the gloves are stretched. It makes a specialty of gloves for hands which have lost fingers.

Books and Periodicals

(21, 22) Baillière, Tindall and Cox (7–8, Henrietta-street, Covent Garden, W.C.), among other important works, had on view Strümpell's "Practice of Medicine" (thirtieth German edition). and Lipscomb's "Diseases of Old Age."—(20) William Heinemann (Medical Books), Ltd. (99, Great Russell-street, W.C.), exhibited their latest works on medicine and surgery, including L. S. T. Burrell's "Artificial Pneumothorax," A. Cannon and E. D. T. Hayes' "Principles and Practice of Psychiatry," also T. H. van de Velde's trilogy of books on sex life.—(32, 40, 41) H. K. Lewis and Co., Ltd. (136 and 140, Gower-street, W.C.), showed the office equipment of a consulting-room, including a roll-top cabinet for panel records; a series of hand-painted coats of arms; also the

"Bedford Doll," a full-sized female figure for training nurses. Among their medical books were Martindale and Westcott's "The Extra Pharmacopœia (20th edition, brought up to date to conform with the 1932 Pharmacopœia), and H. Bailey and R. J. M. Love's "A Short Practice of Surgery."—(25) OXFORD UNIVERSITY PRESS (Warwick-square, E.C.) pointed out particularly V. Meisen's "Varicose Veins and Hæmorrhoids"; Sicard and Forestier's "Lipiodol"; von Economo's "Encephalitis Lethargica"; Nattrass's "Commoner Nervous Diseases"; and the fourth edition of Harrison's "Diagnosis and Treatment of Veneral Diseases."—(76) "THE MEDICAL PRESS AND CIRCULAR" (8, Henrietta-street, W.C.) showed interesting relics of their long history, including the first volume of the Amalgamated Journal published in Dublin in 1886.—(29) "THE PRACTITIONER" (6-8, Bouverie-street, E.C.) displayed recent special numbers, including that on common ailments, and drew attention to future issues, which will contain symposia on influenza, diseases of ear, nose, and throat, and mental disease.—(98) JOHN WRIGHT AND SONS, LTD. (Bristol), had on view a number of books and periodicals, including "Cancer of the Lung," by Maurice Davidson: "Emergency Surgery," by Bailey; "Chronic Otorrhœa," by Friel; and the "Synopsis" series.

Foods and Drinks

(100) CADBURY BROS., LTD. (Bournville, Birmingham), dispensed "Bourn-Vita," their new food drink, composed of British malt, eggs, milk, and cocoa, with a high content of vitamins A, B, and D. —(144) CORN PRODUCTS CO., LTD. (Bush House, W.C.), showed "Dextrosol Brand," a very pure form of dextrose, conforming with the requirements of the 1932 Pharmacopœia, and also "Karo Syrup," an infant food containing a mixture of sugars in which the first difficult step in the digestive process has been accomplished so that no one type of fermentation prevails, and digestion and absorption proceed simultaneously.—(77) COW AND GATE, LTD. (Cow and Gate House, Guildford), showed their well-known preparations, and introduced "Caprolac," the only British preparation of goat's milk, for babies who are sensitive to cow's milk.—(115) ENERGEN FOODS CO., LTD. (Willesden, N.W.), invited visitors to taste their jams and marmalade for diabetic patients.—(73) OXO, LTD. (Thames House, Queen Street-place, E.C.), in addition to their well-known food and gland preparations, had on view a liver substance for injection in the critical stages of pernicious anæmia.—(126, 130) TRUFOOD, LTD. (Wrenbury, Cheshire), had a large stand to remind visitors of the value of their humanised and full-cream dried milk and "Secway" whey powder.

Miscellaneous

(60) BATH. A representative of Bath explained the new thermal vapour treatment now available at the Spa.—(9) THE GAS LIGHT AND COKE CO. (Horseferry-road, S.W.) had on view a new model gas fire raised from the ground and let into the wall, called the "Sun-Square" fire, and a gas infra-red treatment lamp. Their gas stoves are now made in six colours.—(143) JOHNSON AND JOHNSON (Slough, Bucks) emphasised the value of their "Tek" toothbrush.—(72) THE NATIONAL OPHTHALMIC TREATMENT BOARD (1, High-street, Marylebone, W.) presented their system of providing ophthalmic service at a very low inclusive charge, which has now been reduced.

Finally, at one of the most interesting stands in the show (17), INDEX, LTD. (Thames House, Millbank, S.W.), demonstrated an admirable and ingenious card-index system. The records are built up unit by unit, and an inexpensive cabinet may be purchased for a start. All the names are visible as soon as the drawer is pulled out, and the cards can be written on without removal from the file.

LONDON MEDICAL SOCIETIES

AT the opening of a new session we are again giving for the convenience of our readers the names of presidents and hon. secretaries of London medical societies, with the addresses at which they can be approached.

Royal Society of Medicine.—President: Mr. V. Warren Low, F.R.C.S.; Hon. Secretaries: Dr. George Riddoch and Mr. C. W. Gordon-Bryan, F.R.C.S. Address: 1, Wimpole-street, W.1.

Royal Society of Tropical Medicine and Hygiene.—President: Dr. G. Carmichael Low; Hon. Secretaries: Dr. C. M. Wenyon and Dr. N. Hamilton Fairley. Address: Manson House, 26, Portland-place, W.1.

Medical Society of London.—President: Sir John Broadbent, F.R.C.P.; Hon. Secretaries: Dr. T. Jenner Hoskin and Mr. Neil Sinclair, F.R.C.S. Address: 11, Chandos-street, W.1.

Hunterian Society.—President: Dr. Nathan Raw; Hon. Secretaries: Mr. Andrew McAllister, F.R.C.S., and Mr. M. H. Oldershaw, F.R.C.S. Address: 26, Upper Wimpole-street, W.1.

Harveian Society.—President: Mr. Cecil P. G. Wakeley, F.R.C.S.; Hon. Secretaries: Dr. R. Cove-Smith and Prof. Tom Hare. Address: 2, Burwood-place, W.2.

Medico-Legal Society.—President: Lord Riddell; Hon. Secretaries: Mr. Ernest Goddard and Dr. W. G. Barnard. Address: 3, South-square, Gray's Inn, London, W.C.1.

London Association of the Medical Women's Federation.—President: Prof. Mary Lucas Keene, M.B.; Hon. Secretary: Dr. Annis Gillie. Address: 86, Porchester-terrace, W.2.

West London Medico-Chirurgical Society.—President: Dr. H. H. Mills; Hon. Secretaries: Dr. W. S. C. Copeman and Mr. G. B. Woodd-Walker, F.R.C.S. Address: 15, Harley-street, W.1.

Chelsea Clinical Society.—President: Mr. Ivor Back, F.R.C.S.; Hon. Secretaries: Mr. A. Rugg-Gunn, F.R.C.S., and Mr. H. P. Bayliss, L.D.S. Address: 49, Harley-street, W.1.

West Kent Medico-Chirurgical Society.—President: Dr. Harold Pritchard; Hon. Secretary: Dr. C. J. B. Buchan. Address: 267, Baring-road, S.E.12.

Royal Medico-Psychological Association.—President: Dr. R. B. Campbell; Hon. General Secretary, Dr. Reginald Worth. Secretary's office: 11, Chandos-street, W.1.

Society of Medical Officers of Health.—President: Dr. G. H. Pearce; Hon. Secretary: Mr. G. L. C. Elliston. Address: 1, Upper Montague-street, Russell-square, W.C.1.

Tuberculosis Association.—President: Dr. Jane Walker; Hon. Secretary: Dr. G. T. Hebert. Address: St. Thomas's Hospital.

Paddington Medical Society.—President: Dr. G. de Swietochowski; Hon. Secretary: Dr. A. Baldie. Address: 7, Warwick-gardens, W.2.

South-West London Medical Society.—President: Dr. H. C. Sturdy; Hon. Secretaries: Dr. E. G. Housden and Dr. A. W. Wells. Address: 51, Longley-road, S.W.17.

Medical Society of Individual Psychology.—Chairman: Prof. W. Langdon Brown; Hon. Secretary: Dr. F. G. Crookshank. Address: 57A, Wimpole-street, W.1.

British Institute of Radiology.—President: Prof. F. L. Hopwood; Hon. Secretaries: Dr. W. M. Levitt and Mr. G. E. Bell. Address: 32, Welbeck-street, W.1.

St. John's Hospital Dermatological Society.—President: Dr. J. M. H. MacLeod; Hon. Secretary: Dr. J. M. Spencer Scovell. Address: 49, Leicester-square, W.C.2.

Society for the Study of Inebriety.—President: Lady Barrett, M.S.; Hon. Secretary: Dr. T. N. Kelynack. Address: 19, Park-crescent, Portland-place, London, W.1.

MEDICAL NEWS

University of Oxford

Exeter College.—Mr. John Carew Eccles, D.Phil., formerly junior research Fellow, has been elected to a senior research Fellowship in medicine. This is the first appointment to the Fellowship, which is entitled the Staines Fellowship, and was founded by the late Amelia Jackson in memory of her father.

University of Cambridge

On Oct. 21st the following degrees were conferred:—

M.D.—*F. H. McCay, *E. A. H. Grylls, and T. S. Goodwin.

M.B. & B. Chir.—*F. H. King, *R. B. Pringle, *J. H. Bentley, W. McO. Macgregor, V. T. Thorne, C. S. Lewis, W. McN. Niblock, and C. E. Taylor.

M.B.—*E. B. Murrell, B. C. Nicholson, R. A. Jones, and D. J. R. Steen.

B.Chir.—*J. L. S. Scott, *Matthew Westwood, and W. W. Sargant.

* By proxy.

Dr. A. N. Drury has been appointed Huddersfield lecturer in special pathology.

Mr. Geoffrey Keynes, assistant surgeon to St. Bartholomew's Hospital, has been appointed to the Sandars readership in bibliography for 1933.

Royal College of Surgeons of Edinburgh

At a recent meeting of the College, with Mr. John Wheeler Dowden, the president, in the chair, the following 29 successful candidates (out of 97 entered) who passed the requisite examinations between July 7th and 15th were admitted as Fellows:—

Deborah M. Alcock, M.B. Edin.; N. J. Bakhru, M.B. Bomb.; W. S. Brindle, M.B. Liverp.; J. H. Casewell, M.B. Cape Town; C. G. Crawford, M.B. Sydney; Robert Everett, M.B. Edin; J. A. C. Fleming, M.B. Edin.; Isabella Forshall, M.B. Lond.; Isaac Goldberg, M.B. Edin.; J. I. R. Gray, M.B. N.Z.; T. E. Holland, M.D. Manitoba; R. McK. Honey, M.B. Edin.; J. J. Jennings, M.B. Irel.; Phyllis I. Kaufmann, M.B. Manch.; Herbert Kaye, M.R.C.S. Eng.; Kenneth Knowles, M.R.C.S. Eng.; R. B. Lumsden, M.B. Edin.; H. I. McClure, M.B. Belfast; H. M. Martin, M.B. Dub.; C. F. Mayne, M.R.C.S. Eng.; J. J. O'Reilly, M.B. Dub.; R. J. Parry, M.B. Lond.; C. O. F. Rieger, M.B. Adelaide; Eugene Sandner, M.B. Melb.; D. P. Settna, M.R.C.S. Eng.; L. A. H. Snowball, M.B. Lond.; J. S. Sutherland, M.B. Edin.; Ba Than, M.B. Calcutta; and G. E. Waterworth, M.D. N.Z.

Scottish Conjoint Board

At recent examinations by the conjoint board of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates were successful:—

L.R.C.P., L.R.C.S., & L.R.F.P. & S.

M. D. S. Jayawardana, K. W. Harcourt, D. McN. Beaugie, A. McN. Aitken, A. B. Morrison, R. D. Johnston, R. L. Sutton, V. T. Naidu, Donald Cameron, S. D. Senapathi, T. D. L. Bolan, Andrew Muir, M. G. Naidoo, Julius Ossip, Alastair Macdonald, M. A. Abdalla, and G. R. Tissoveresinghe.

D.P.H.

D. M. Alston, Elizabeth R. Jamieson, Jessie M. Jamieson, J. L. Hunter, John Comrie, Jessie R. Wilson, and A. St. J. Moffat.

Part. I.—T. K. Kuruvila, Henry Caplan, R. A. Read, Barbara C. Welsh, A. C. Scott, Jean W. R. Paton, Rachel B. Nelson, M. D. Macqueen, W. M. P. McDonald, and J. L. Smith.

Part II.—J. F. Hamilton.

Royal College of Physicians of Ireland

At the annual stated meeting of the College, held on St. Luke's Day, Dr. Thomas Gillman Moorhead, Regius professor of physic in the University of Dublin, was re-elected president for a third year of office. He nominated Dr. F. C. Purser vice-president. The censors appointed were: In medicine, Drs. F. C. Purser and C. Murphy; in medical jurisprudence, Dr. E. T. Freeman; in midwifery, Dr. J. S. Quin. In the evening the President and Fellows dined in the College Hall, and entertained, among other guests, the Lord Mayor of Dublin, the President of the Royal College of Surgeons in Ireland, the President of University College, Dublin, the Bishop of Limerick, and the Dean of the School of Physic.

Royal Opening of Hospital Extensions

On Monday last week Prince George opened a new casualty department at King Edward Memorial Hospital, Ealing, of which he is patron. The cost has been £10,000. Two days later he opened an extension of the Royal Victoria and West Hants Hospital at Boscombe upon which £120,000 has been expended, of which £87,000 has been obtained. The additions, which have more than doubled the size of the hospital, include new out-patients' blocks, extensive improvements of the specialist departments, and a large number of wards for private patients. The board room has been entirely decorated and furnished as a memorial to the late Colonel Heygate Vernon, F.R.C.S., who rendered great services to the hospital.

National Association for the Prevention of Tuberculosis

The verbatim report of the annual conference held in London in July last has now been published. Copies may be had from the secretary, N.A.P.T., Tavistock House North, Tavistock-square, London, W.C.1, price 7*s.* 6*d.*, post free.

Royal Institution

The first of the Friday evening discourses, delivered at 9 P.M., will be given on Nov. 18th by Dr. R. G. Canti, who will demonstrate a film showing the cultivation of living tissue cells. At 5.15 P.M. on Tuesdays, from Nov. 1st to 22nd, Prof. E. N. da C. Andrade will speak on Rays and Radiation, and at the same hour on Nov. 29th and Dec. 6th and 13th, Prof. Lancelot Hogben is to lecture on Colour Changes in the Animal Kingdom. The 107th course of six lectures "adapted to a juvenile auditory" will be given by Prof. A. O. Rankine, beginning on Dec. 27th. The address of the Royal Institution is 21, Albemarle-street, London, W.1.

An International Congress on Biliary Lithiasis.

This Congress was held at Vichy from Sept. 19th to Sept. 24th, when delegates attended from Germany, Cuba, Spain, Japan, United States, Nicaragua, Venezuela, Argentine, Austria, Belgium, Bolivia, Brazil, Bulgaria, Canada, Chile, Ecuador, Egypt, Greece, Guatemala, Holland, Hungary, Iceland, Italy, Mexico, Norway, Peru, Portugal, Poland, Roumania, Sweden, Switzerland, Turkey, Uruguay, and Great Britain. The principal papers read were on (1) The Sequelæ of Cholecystectomy; (2) The Medical Hydrotherapeutic Treatment of Biliary Lithiasis; and (3) The Lithiasistic Liver.

Prof. D. P. D. Wilkie, of Edinburgh, reviewed the subject of cholecystectomy. The type with remote effects of chronic cholecystitis, he said, were either thin people with myocardial lesions due to toxins from the gall-bladder or very fat females with similar toxic effects in a fat-laden heart; the former gave good results, but the latter only if medical treatment was given for the obesity. In this type he included cases of rheumatism and nephritis, which had improved by cholecystectomy.—Dr. Victor Donnet (New York) pointed out that cholecystectomy should not be performed unless medical treatment failed and the gall-bladder function grossly impaired because of the dyspepsia which followed the passive dilatation of the whole of the biliary system.—Dr. A. Gosset and Dr. Petit-Dutaillis (Paris) mentioned jaundice due to obstruction of the common bile duct by calculi left at the operation, stenosis of the duct, adhesions causing extensive compression.—Dr. C. Giraud (Montpellier) stated that many of the sequelæ were due to a residue of the liver disturbances present before the operation which react to medical treatment only after operation.—Dr. H. Béclère (Paris) showed the value of X ray diagnosis in revealing post-operative fistula, calculi, in the biliary system or by combined radiography of stomach and duodenum, sequelæ due to kinking of the duodenal cap.—Dr. P. Abrami mentioned the experimental work on ionic antisepsis moving the pH of bile to the alkaline side, and thus rendering it unsuitable for many bacteria. He also mentioned the value of urotropine intravenous injections in association with medical drainage.—Prof. F. Umber (Berlin) stressed the effect on the liver cells of biliary obstruction producing a picture like subacute yellow atrophy (hepatosis), and the value of glycogen to the liver cell, and suggested a diet rich in lævulose and glucose, with insulin injections in association with biliary antisepsis and hydrotherapy.—Dr. L. Delherm and Dr. H. Dausset (Paris) showed that true hepatic stones contained less cholesterol than the gall-bladder stones, and felt that both occurred in people with a calculous diathesis.—Dr. M. Brulé (Paris) mentioned the obstructive jaundice of hepatitis and its differentiation from common duct obstruction by the marked enlargement of the liver in the second case; of the differential diagnosis of jaundice due to cancer and stone in the common duct. He pointed out that in the latter bile can be obtained by duodenal drainage.—Dr. J. Dieryck (Louvain) considered the only reliable liver function test depended upon a measure of the glycogenic function, for which purpose he used galactose and measured the total and partial concentrations in the urine, differentiating jaundice due to obstruction of the bile ducts from that due to hepatic cellular disease.—Dr. R. Gilbert (Geneva) mentioned the value of tetraiodophenolphthalein by the mouth in radiography, especially in association with X ray examination of the stomach and duodenum, and suggested its possible value as a liver function test. The proceedings of the Congress, with abstracts of papers in six languages, have been issued in volume form. (Paris: G. Doin et Cie. Fr.50.)

Sir Henry Dale, M.D., secretary of the Royal Society and director of the National Institute of Medical Research, has been elected a member of the Swedish Academy of Science.

World League for Sexual Reform

On Thursday, Nov. 3rd, at 8 P.M., at the London School of Hygiene, Keppel-street, London, W.C., the British section of this league will hold a meeting to discuss the Laws concerning Abortion.

National Institute for the Blind

Mr. C. C. G. Nock and Mr. John May, the first blind candidates to sit for the Society of Apothecaries' examination in diathermy, have successfully qualified in that subject. Both are chartered masseurs, having been trained at the National Institute's school.

Royal Sanitary Institute

A discussion on Modern Ideas on the Construction and Administration of Infectious Diseases Hospitals will be opened by Dr. J. A. Charles, at the Town Hall, Durham, at 4 P.M. on Friday, Nov. 4th. At the house of the Institute, 90, Buckingham Palace-road, London, S.W., at 5.30 P.M., on Tuesday, Nov. 8th, there will be discussions on the Cyanide Fumigation of Ships and on the Control of Insects on Foodstuffs and other Raw Materials by Fumigation. At 5.30 P.M. on Tuesday, Nov. 29th, also at the Institute, Dr. James Fenton will open a discussion on Clearance Areas and Improvement Areas.

Chelsea Clinical Society

The annual dinner of this society was held at Claridge's Hotel on Oct. 18th and was attended by 95 members and guests. Mr. Ivor Back took the chair and replied to the toast of the Chelsea Clinical Society, proposed in a humorous speech by Mr. Sidney Dark. "The Guests" was proposed by Dr. Rivers Pollock, and replies were made by Mr. Ralph Straus, Mr. George Belcher, Mr. Warren Low, and Sir Henry Curtis-Bennett. Mr. Warren Low, as president of the Royal Society of Medicine, laid stress on the important part, social as well as educational, played by the smaller medical societies in the progress of medicine.

Fellowship of Medicine and Post-Graduate Medical Association

Arrangements for the coming week will be found in the Medical Diary in another column. There will be a course in practical pathology at the Hospital for Consumption, Brompton, S.W., from Nov. 10th to Dec. 1st, on Thursdays, from 11-45 A.M. to 1 P.M. A demonstration of selected cases of general interest will begin at the Lambeth Hospital, Brook-street, S.E.11, on Friday, Nov. 18th, at 2 P.M. A course consisting of six lecture-demonstrations on Diagnosis and Treatment of Chronic Rheumatism will be held at the British Red Cross Clinic for Rheumatism, Peto-place, N.W., from Nov. 22nd to Dec. 8th, on Tuesdays and Thursdays, at 8.30 P.M. A course in medicine, surgery and gynæcology will be held at the Royal Waterloo Hospital, from Nov. 7th to 26th (afternoons and some mornings). Further particulars may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W.1.

The Place of Biology in Education

Under the auspices of the British Social Hygiene Council a conference on the place of biology in education will be held at the house of the British Medical Association, Tavistock-square, London, W.C.1, on Nov. 30th and Dec. 3rd. Lord Irwin, President of the Board of Education, will be honorary president of the conference, over which Lord Chelmsford will preside.

A preliminary agenda has been issued from which it appears that on the morning of Nov. 30th Sir Michael Sadler and Sir William Hardy will open a discussion on the National and Imperial Need for a Biological Outlook. In the afternoon two concurrent sessions will be held. At one of these Prof. A. V. Hill, Sir Walter Fletcher, Prof. J. Strong, Mr. F. Herbert Toyne, and Mr. F. Mander will speak on How Local Authorities can promote the teaching of Biology. At the other session Biology in the Training Colleges will be discussed. On Dec. 3rd, the morning session will be devoted to a discussion on Biology in the Central, Senior Elementary, and Junior Elementary Schools, with Prof. Winifred Cullis in the chair, and the afternoon session to a discussion on Biology in the Public, Secondary, and Preparatory Schools. Among the speakers will be Dr. Ralph H. Crowley, senior medical officer, Board of Education, and Mr. G. S. M. Ellis, educational secretary, National Union of Teachers. At this session Mr. W. W. Vaughan, lately headmaster of Rugby, will take the chair and the speakers will include Prof. H. A. S. Wortley, Mr. D. Ward Cutler, and the Rev. Stewart A. McDowall.

Neurological Institute at McGill University

A new neurological institute is to be built at McGill University, Montreal, containing public, private, and semi-private wards, together with the necessary equipment for investigation and research. Its erection is made possible by the grant of over 1,232,000 dollars by the Rockefeller Foundation. The director will be Dr. Wilder G. Penfield, who is at present in charge of the department of neurology and neurosurgery of the University. He will be assisted by Dr. Colin Russel, Dr. F. K. MacKay, and Dr. W. V. Cone.

Freedom Conferred on a Medical Man

After 40 years' service as medical officer of health and school medical officer, the *honorary freedom of the borough* of Morecambe and Heysham was, on Thursday last, bestowed upon Dr. John William Watterson, who is also an alderman of the county of Lancaster and a county and borough magistrate. Dr. Watterson is a native of Burnley, and is the senior partner in the firm of Drs. Watterson, Hogarth, and McFadzean, of Morecambe. Over 2000 people attended the statutory meeting of the Corporation at which the distinction was conferred.

Red Cross Clinic for Rheumatism

Attendances at this clinic in Peto-place, London, N.W., numbered 6091 last month, compared with 5770 in September of last year, and 2684 in September, 1930. The total number of treatments given on the general floor during the month were 4449 to women and 3344 to men, and nearly 1000 treatments were given on the private floor. Provision is now made for remedial exercises in a gymnasium. The equipment was provided by the staff themselves as a contribution to the more effective carrying-out of the work.

Société Médicale du Littoral Méditerranéen

The annual tour organised by this society on the Côte d'Azur will take place this year soon after Christmas. Cannes will be the starting point, and most of the principal towns on this coast will be included in the itinerary. The tour will be under the scientific direction of Prof. Forgue, Prof. Marcel Labbé, and Prof. Laignel-Lavastine; demonstrations and meetings will be held at the various stopping places, and hospitals and other scientific institutions will be visited. Further particulars may be had from the secretary of the society, 24, rue Verdi, Nice. A second tour will be held at Easter.

Portsmouth Mental Hospital

Last week the Lord Mayor of Portsmouth, Alderman F. G. Foster, opened two new villas, to accommodate 124 patients, which have been added to this hospital. One has been named after Dr. H. Devine, formerly medical superintendent, and the other after Alderman W. Gleave, the deputy Lord Mayor. The buildings, which face due south, are planned on three sides of a rectangle, have cost over £27,000. At the opening ceremony last week Dr. T. Beaton, the medical superintendent, stated that during the last four years patients had increased by 200. This "extraordinary increase" was, he said, partly because "patients did not die as they used to," and partly because mental disease is now recognised at a much earlier stage.

New Orthopædic Clinic at Glasgow

The Orthopædic and Rheumatic Clinic of Glasgow is to have new premises in Bath-street. Six years ago the clinic started with five patients; at present 165 are treated daily. The clinic is for people who cannot afford private treatment and who do not wish to receive free treatment in the city hospitals. In its short career it has been run free of debt. In 1931 49,950 patients were given treatment, and as this figure represents an increase of 17,523 on the previous year, more commodious premises were necessary. The clinic is to be opened by the Earl of Home.

Institute of Medical Psychology

A fortnight's course on Functional Nervous Disorders, for members and students of the medical profession only, will open at this institute (formerly the Tavistock-square Clinic) on Nov. 7th. There will be three lectures daily, at 4.45, 5.45, and 8.15 P.M., and they will be given at the new premises in Torrington-place, London, W.C. The lecturers during the first week will be Dr. H. Crichton-Miller (director of the institute), Dr. J. R. Rees (deputy director), Dr. R. G. Gordon, Dr. H. Gardiner-Hill, Dr. Russell Brain, Dr. Alice Hutchison, Dr. E. A. Hamilton-Pearson, and Dr. J. Barrie Murray. Tickets may be had from the hon. lecture secretary, at 51, Tavistock-square, W.C.1, which will be the address of the institute until the end of October. A year's post-graduate course in Psychotherapeutic Theory and Method, for medical practitioners, and also a year's course in the children's department, for psychological students, are now in progress. Particulars of these and subsequent courses may be had on application.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Ottawa Agreements

ON Thursday, October 20th, the House of Commons agreed in Committee to the resolutions dealing with the agreements arrived at between the British Government and the delegates from the Dominions and India at the Imperial Economic Conference at Ottawa. The resolutions were agreed to on Report on the following day.

Ottawa and Cod-liver Oil

On Monday, Oct. 24th, the House of Commons discussed on Report the resolutions agreed to in Committee of Ways and Means in reference to the Bill for the ratification of the trade agreements reached between the British, Dominion, and Indian Governments at Ottawa.

Mr. RHYS DAVIES moved an amendment to omit from the scope of the proposed agreements the duties on oil, castor oil, linseed oil, coconut oil, ground-nut oil, rape oil, and sesamum oil. He said that in 1930 the imports of Norwegian cod-liver oil were approximately 16,000 barrels, and in 1931 approximately 16,500. We imported cod-liver oil from Newfoundland in the ratio of one to 30 compared with Norway, and those who understood the problem said that it did not matter what preference we gave to Newfoundland, we would never be able to supply our market from within the British Empire with this commodity. Why, therefore, were the Government so very drastic in putting 1*s.* 4*d.* per gallon on cod-liver oil? The people affected by cod-liver oil were very largely consumptives. Local authorities spent enormous sums of money in buying cod-liver oil in bulk for use in sanatoria, and they were very apprehensive that their expenses would be considerably increased by the new duties. Cod-liver oil was supplied in very large quantities under the National Health Insurance scheme, and a great deal of the money spent by approved societies for the medicine in respect of 17,000,000 insured persons was expended on cod-liver oil.

Mr. MCKEAG, in supporting the amendment, said that many a child in the north of this country owed its life to being able to obtain cod-liver oil. The current copy of THE LANCET contained two letters by eminent medical authorities. In one case a doctor wrote: "The possibility of a rise in the price of cod-liver oil, as a result of the Ottawa proposals, must arouse some anxiety in the minds of all who are concerned with the welfare of little children, especially those of the poorer class. Cod-liver oil has a value in early life which cannot easily be replaced, unless indeed any adequate supply can be obtained of other fish-liver oils with similar properties." The letter wound up as follows:—

> "For those whose circumstances make a liberal use of eggs, milk, and cream a simple matter, cod-liver oil is unnecessary, but for the poorly fed who cannot obtain these foods in any adequate quantity, cod-liver oil is of very great value, and it would be a bad day for the children when the price of cod-liver oil rose sufficiently to prevent its use for every child who is needing it."

A lady doctor, of the Lister Institute of Preventive Medicine, also writing in THE LANCET, said: "It is evident that any steps which may raise the price and lower the consumption of cod-liver oil, especially in winter, would have a deleterious effect upon the health of the population, involving particularly the well-being of the children of the poorer classes." The proposed tax, Mr. McKeag continued, could have no other result but to increase the price of cod-liver oil to the poorer people. Of the annual consumption of 500,000 gallons of cod-liver oil, only 25,000 gallons were obtained from Newfoundland, and therefore 475,000 gallons were to be taxed in order to give Newfoundland an increased price.

Mr. H. G. WILLIAMS said that this country was a large cod-liver oil producing country, and last year 5,000,000 cwts. of cod-fish were landed on our shores. These fish were cleaned when caught and the livers taken apart. If the livers were boiled immediately they would give cod-liver oil of medicinal quality, and in some cases boilers for that purpose were provided on the trawlers. The practice in this country in the past had been, to a large extent, in the case of the trawlers going long distances to wait until they reached shore before boiling the livers, which were then rather stale. That produced oil of an industrial quality, which had high medical qualities but was not pleasant to the palate and was therefore mainly used for cattle, and was not given to children. The amount of the duty was 4*d.* a quart, and to the consumer the duty would be not more than 4 or 5 per cent. All that was wrong with our own production was that we were producing relatively too much industrial and not enough medicinal cod-liver oil. We could increase our total production to a substantial extent, and Newfoundland and the United Kingdom could supply all the oil that was needed in admirable qualities at reasonable prices.

Mr. MALLALIEU said that in its issue of Oct. 15th THE LANCET said:—

> "A leading newspaper last Sunday, in dismissing opposition to the Ottawa Agreements, remarked that even the dissenting Liberals 'cannot be exactly stirred to the depths by the reflection that their cod-liver oil will cost them more.'"

and THE LANCET went on to say:—

> "The medical profession is hardly likely to share this light-hearted view of the proposed duties. Year by year it is made clearer that the diet of the poorer classes, if not the richer, is not the 'balanced diet' advised by the text-books. Report after report on rickets, dental caries, maternal mortality, or infectious disease, emphasises the importance of plenty of fresh foods, or, if these are too expensive, of cod-liver oil."

Continuing, Mr. Mallalieu said that the reason why we had been buying cod-liver oil from Norway in the past was because cod-liver oil was produced in Norway under conditions which were most suitable. It was an acknowledged fact that for medicinal purposes cod-liver oil must be produced from fresh livers. It was of no use for medicinal purposes when the livers had become even slightly decomposed. In Newfoundland the fishing was in two of the hottest months of the year, whereas in Norway the fishing was conducted in March and February. In Norway there were admirable factories, some of them owned by British people, whose products the Government proposed to tax on entry into this country. The whole production was concentrated in a very small area, whereas in Newfoundland the production was carried on by small scattered producers whose transport costs were naturally very much more than those of the Norwegians.

Dr. BURGIN (Under-Secretary for the Dominions) said that there were two points with regard to cod-liver oil which the Government had to meet. The first was with regard to the retail price of the ordinary quantity of cod-liver oil required for consumption by children and patients in hospitals. The normal method of selling cod-liver oil was in an 8-oz. bottle or some other regular standard bottle. There was no evidence in the possession of the Government that would lead one to think that the price was going to be increased. They were also advised that the increase in price to any individual farmer for oil for cattle feeding was likely to be quite insignificant. Those two comments broadly disposed of the whole of the case that was made either in THE LANCET or elsewhere with regard to cod-liver oil. The real truth was that there were only certain things that Newfoundland could produce. The cod fisheries and cod-liver oil production were one of Newfoundland's greatest assets. It was tragic that, owing to lack of demand, something like a third only of the total possibilities of cod-liver oil had been produced in Newfoundland in recent years. It was the hope of the Government that by this method something might be done to encourage that great industry without appreciable extra cost to the consumer.

The amendment was rejected by 264 votes to 64—majority 200.

The Need Test

On Friday, Oct. 21st, Mr. MACDONALD (*Prime Minister*), replying to Mr. CROOKE, stated that the Government proposed to introduce and pass through all its stages before the end of the present session legislation to deal with certain aspects of the administration of the Need Test. (Cheers.)

HOUSE OF COMMONS

THURSDAY, OCT. 20TH

Dangerous Driving

Mr. ROBINSON asked the Home Secretary whether he was aware that the regulations as to dangerous driving were not being adequately enforced in many areas; and whether he would give instructions to police forces throughout the country to take special notice of the speeds at which heavy commercial vehicles were driven through small towns and villages.—Mr. STANLEY replied: The attention of chief officers of police was specially directed to this matter by my right hon. friend's predecessor a few months ago, and there is no reason to doubt that all practicable steps are taken by the police to check excessive speeding on the part of drivers of heavy vehicles. As at present advised, my right hon. friend does not think that any further instructions on the subject are called for.

Water Pollution Research

Sir COOPER RAWSON asked the Lord President of the Council whether he could furnish any information on the result of the investigations of the microbiology laboratory at the Rothampsted station at Harpenden with regard to the suffocation of fish owing to the discharge into rivers of the residue of fats in water in which churns and other equipment from milk factories and large dairies were cleansed.—Mr. BALDWIN replied: The investigations referred to, which are being carried out at Rothamsted under the auspices of the Department of Scientific and Industrial Research as part of the programme of the Water Pollution Research Board, are not yet complete, though important results have been obtained. There is good reason to expect that milk effluents can be rendered innocuous by filtration methods, and the main problem remaining is to discover an economical method of getting rid of fatty film which accumulates on top of the filter bed.

The Umckaloabo Treatment

Sir COOPER RAWSON asked the Minister of Health whether he had further considered the treatment for tuberculosis known as umckaloabo, and the cases in which it was claimed cures had been effected: and if he would institute an official inquiry into the merits of the system.—Sir E. HILTON YOUNG replied: The evidence available in regard to the efficacy of this preparation has been carefully considered on several occasions. I am advised that the claims made on its behalf in regard to tuberculosis do not appear to differ in character or degree from those made for many other so-called "remedies" which have been advertised from time to time and afterwards found to be valueless. The answer to the second part of the question is in the negative.

Assistance to Deaf and Dumb Persons

Mr. ROBINSON asked the Minister of Health whether he was aware of the discrepancy which existed between the provisions made for the treatment of blind persons and those who were deaf and dumb: and whether he would consider taking steps which would ensure that deaf and dumb persons were placed on a level with the blind in respect of assistance given from public sources.—Sir E. HILTON YOUNG replied: The report recently made to my department and the Board of Education on an investigation into the conditions of the deaf and dumb in this country will shortly be published. In the meantime it is not possible to contemplate the introduction of legislation on this subject.

Psittacosis

Mr. TURTON asked the Minister of Health how many cases of psittacosis had been reported in this country before the present restrictions upon the importation of parrots were imposed four years ago, and how many cases had been reported since the restrictions were imposed; and whether, in view of the inconvenience the restrictions caused, he could relax or abolish them.—Sir E. HILTON YOUNG replied: Some 125 cases of psittacosis were reported in this country before the present restrictions came into force, and four cases have been reported since. In view of the fact that further cases of this disease have recently occurred in the United States of America and on the Continent of Europe, and that the Office International d'Hygiène Publique have recommended the maintenance of existing prohibitions, I cannot see my way at present to relax or revoke the Regulations in force in this country.

Children in Poor-law Institutions

Mr. LOVAT-FRASER asked the Minister of Health how many children over the age of 3 were living in poor-law institutions in the county of Cornwall and within the area of the Isle of Ely county council respectively.—Sir E. HILTON YOUNG replied: I am informed in a recent report of my general inspector that there are 60 children over 3 in poor-law institutions (as distinguished from children's homes) in the county of Cornwall, and that there are 32 such children in poor-law institutions in the Isle of Ely.

Infantile Mortality

Mr. RHYS DAVIES asked the Minister of Health if he could give the infantile mortality-rates for London, New York, Chicago, Paris, Berlin, Vienna, and Moscow for the last year for which statistics were available.—Sir E. HILTON YOUNG replied: The latest year for which comparative statistics are available for all these cities is 1929. The infantile mortality-rates (number of deaths under one year per 1000 live births) in that year were as follow: London, 71; New York, 59; Chicago, 60; Paris, 101; Berlin, 86; Vienna, 79; and Moscow, 129. These figures are given in the League of Nations publication, "Statistics of Notifiable Diseases, 1929."

MONDAY, OCT. 24TH

Milk Reorganisation Report

Captain PETER MACDONALD asked the Minister of Agriculture by what date the report of the Milk Reorganisation Committee would be available.—Major ELLIOT replied: The Milk Reorganisation Commission is, I understand, now considering its recommendations, and its report is expected to be available before the end of this year.

Employment of Juveniles

Viscountess ASTOR asked the Home Secretary whether it was the intention of the Government to bring before Parliament at an early date a resolution authorising local authorities to make by-laws relating to the hours and conditions of employment of juveniles.—Sir JOHN GILMOUR replied: I presume that the noble lady refers to Section 51 of the Children and Young Persons Act, 1932, which confers powers upon local authorities to regulate by by-laws the employment in certain occupations of persons between 14 and 18 years of age. Subsection (4) of that section provides that an order of the Secretary of State appointing a date for these powers to come into operation shall not become effective until it has been approved by resolutions passed in the same session of Parliament by both Houses of Parliament. I would refer the noble lady to the statements made by the Government spokesman when this provision was under discussion in this House. The Government spokesman stated that it was not the intention of the Government that this question should be dealt with merely by bringing into operation Section 51 of the Children and Young Persons Act, 1932. He made it clear that it was the intention of the Government, when they came to deal with this question, to bring it before Parliament in the form of a Bill.

NEW WING AT PORT TALBOT HOSPITAL.—Last week the Bishop of Llandaff dedicated a new children's wing as a memorial to the late Sir Sidney Byass at the Port Talbot Memorial Hospital.

HULL ROYAL INFIRMARY.—Mr. R. J. Lowson has compiled an account of "The Hull Royal Infirmary, 1782–1932," to which have been added biographical notes of the hon. medical staff by Dr. Robert Grieve. This admirable little addition to hospital historical literature contains many interesting details, especially in regard to the early days of the institution. One of its benefactors in the beginning was Sir Henry Etherington, who disapproved of the maintenance of an honorary staff, suggesting that only one physician and one surgeon should be employed and that they should be paid. "I suppose," he wrote, "the physician would not expect more than two guineas per week, that being the usual fee for twice attendance every day." There were originally 60 beds: there are now 397.

OBITUARY

ATWOOD THORNE, M.B.Lond.

Dr. Atwood Thorne, who died at Caerleon on Oct. 6th, was born in 1867 in Shanghai, the son of Mr. J. Thorne, and received his general education at Brighton College, proceeding to St. Mary's Hospital for his medical training. A successful student, he held the appointments of house surgeon and obstetric officer at the hospital, and was assistant in the laryngological department for two years. This determined his later special work: he was elected surgeon to the London Throat Hospital, was a vice-president of the British Laryngological, Rhinological, and Otological Association, and for a period was secretary of the Laryngological Section of the R.S.M. He was also the author of a small book dealing with the education of the deaf in the metropolitan area.

Atwood Thorne was known prominently as a medico-military volunteer. He had been a volunteer as a lad, and when he served as a surgeon-captain C.I.V. in the South African War, where he was mentioned in despatches, he was already in receipt of the V.D. In the late war he was appointed honorary Colonel R.A.M.C., held two responsible administrative posts, and received the Queen's medal and three clasps.

Apart from his medical and military interests, Atwood Thorne was a considerable archæologist, and, when on retirement he decided to live at Caerleon, he took an active interest in the excavation of Roman remains in the neighbourhood, some of them on his own property. He also made a valuable collection of pink lustre pottery, which he described in a beautifully illustrated book. He was for two years master of the Cutlers Company.

In the many different and important contacts which he made with life Atwood Thorne earned deservedly the high regard of his fellows.

AFTER more than a year of ill-health Dr. GEORGE BLAKE MASSON died on Oct. 11th, at Litlington, near Alfriston, in Sussex. A son of Colonel Masson, and grandson of General George Blake, he was born at Darjeeling 72 years ago. He got his medical education at Cork and Dublin and in Edinburgh where he qualified in 1883. Most of his professional life was spent in Norfolk, first at Saxlingham, near Norwich, and later at Fincham, Downham Market. Here Dr. Masson practised until the war, acting as medical officer and public vaccinator of his district. When war broke out he already held a major's commission in the Territorials, being attached to the 2nd East Anglian Field Ambulance, and on service in France he was promoted Lieut.-Colonel. In 1920 he went to practise at Alfriston and he remained in active work there until his illness last year. A good shot and a rider to hounds, he was popular in the district and made many friends. He is survived by his widow.

Dr. HENRY JAMES BAILEY, who died on Oct. 10th at the age of 67, was one of the senior medical practitioners of Brighton. He graduated at Edinburgh in 1887 and after holding a house appointment at the Royal Albert Hospital, Devonport, came to London to work as assistant medical officer in the London Medical Mission Dispensary. Thence he went out to Palestine, where his father was engaged in mission work, and became medical superintendent of the Church Missionary Society's hospital and dispensary at Nablus. He spent several years there, and when he returned to England lived at Southport before settling down finally at Brighton. Here he acquired a large practice, and a few years ago was joined in partnership by Dr. Ivor Kinsley. Dr. Bailey leaves a widow and one son, Mr. Hamilton Bailey, who is surgeon to the Royal Northern Hospital.

ON Oct. 8th Dr. SAMUEL WELLESLEY COOMBS died at Poole in Dorset, aged 76. For many years he was one of the leading practitioners of Worcester, where he was associated with the Dispensary for over 40 years. Son of the late Harold Coombs, of Worcester, he was educated at the local grammar school, and qualified from Glasgow in 1878, gaining the Richardsonian prize. After holding house appointments at the Glasgow Royal Infirmary he returned to Worcester and became medical officer to the Dispensary. In 1881 he became F.R.C.S. Edin., and later he was appointed anæsthetist to the Infirmary. When in 1919 he relinquished his post as district medical officer he told the Board that he had kept records of his professional mileage during 40 years, and found that during this time he had cycled 110,000 miles, driven horses 90,000 miles, and motored 40,000, making 240,000 miles in all—or once round the world in every four years. On his retirement in 1919, when he went to live at Poole, Dr. Coombs was succeeded by his partner, Dr. F. L. Spalding. He married in 1883, and leaves a son and two daughters.

Dr. MATTHEW LOVELL MACKINTOSH, who died in London on Sept. 26th, followed his father as a practitioner in the Crowborough district. After taking the Scottish conjoint diploma in 1890 he served as a ship's surgeon with the Clan line, and returned to practise for a time at Barrow-in-Furness, before finding his permanent home in Sussex. He was on the staff of the Crowborough Cottage Hospital, and was a keen supporter and follower of many kinds of sport.

Births, Marriages, and Deaths

BIRTHS

BRODIE.—On Oct. 24th, at Melbourne, Australia, the wife of Dr. C. E. Brodie, of a son.

FRASER.—On Oct. 18th, at Lima House, Reading, the wife of Dr. H. D. Forbes Fraser, of a daughter.

JAMES.—On Oct. 22nd, at The Lawn, Hillingdon, Middlesex, the wife of Dr. G. W. B. James, of a son.

McCORMICK.—On Oct. 20th, at Welbeck-street, W., the wife of Dr. Edward William McCormick, of a son.

MARRIAGES

WOODD-WALKER—TROILI.—On [illegible] Sweden, Geoffrey Basil Woodd-Walk[illegible] en [illegible] Anne-street, W.1, and 6, Da[illegible] ll, of Uddeholm, Sweden.

DEATHS

BULCOCK.—On Oct. 16th, suddenly, at Foxley-lane, Purley, Dr. Joseph Henderson Bulcock.

McLAREN.—On Oct. 21st, Dr. Thomas McLaren, of 27, Bruce-grove, Tottenham, London, N.17.

MURPHY.—On Oct. 14th, suddenly, at Dangan Cottage, Thomastown, of acute gastro-enteritis, Patrick Joseph Murphy, F.R.C.S.

POPE.—On Oct. 19th, 1932, at Southend, Percy Pope, M.R.C.S., L.R.C.P., M.D.

SMITH.—On Oct. 17th, John Salmon Smith, M.R.C.S., L.R.C.P. Lond., D.P.H, Camb., of West Road, Old Colwyn, late West African Medical Service.

WEISS.—On Oct. 15th, Major Willoughby Gaspard Weiss, V.D., T.D., Dental Surgeon, aged 75.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 1st.—5.30 P.M., Orthopædics (Cases at 4.30 P.M.) Cases: Mr. E. P. Brockman: 1. Osteitis of the Os Calcis. 2. Ewing's Tumour. Mr. R. Brooke: 3. Localised Decalcification of the Knee-joint. 4. X Ray Pictures of a Similar Case. Mr. Alan Todd: 5. Syringomyelia with Scoliosis. 6 Scoliosis with Paraplegia (Recovered). Further report of a case shown in 1930. Other cases will be shown.—8.30 P.M., Pathology. Laboratory Meeting at the Pathological Institute, London Hospital, E 1. Demonstrations: Dr. S P. Bedson and Dr. J. O. Bland: Developmental Forms of Psittacosis Virus. Dr. J. O Bland and Dr. D. S. Russell: Tissue Cultures of Various Types of Glioma. Dr. D. T. Harris: A Continuous Kataphoresis Apparatus suitable for Bacteriology. Dr. T. Lumsden: Some Effects of Radiation on Tissues. Dr. E. P. Stibbe: Some Congenital Abnormalities. Dr. H. M. Turnbull: Bony Changes in Cœliac Disease and Renal Rickets Dr. F. C. O. Valentine: A Modification of the Direct Method of Typing Pneumococci Dr. J. Vaughan: Erythroblastic Anæmia Associated with Cœliac Disease. Dr. W. W. Woods and Dr. A. B. Bratton: Pathological Specimens.

Wednesday.—5 P.M., History of Medicine. Papers: Dr. Vincent Dickinson: The Outbreak of Plague at Milan in 1630. Dr Aubrey Lewis: Melancholia. 8.30 P.M., Medicine and Surgery. Special Discussion on the Treatment of Acute Appendicitis. Openers: Dr. J. A. Ryle (Medicine) and Mr. H. H. Rayner (Surgery).

Thursday.—Semon Lecture. 8.30 P.M., Tropical Diseases and Parasitology. Symposium on the Pathology of Bucco-pharyngeal and Skin Ulcers. Mr. T. Pomfret Kilner: The Surgical Aspects of Certain Skin Ulcers. Dr F. C. Smith: The Pathology of Tropical Ulcer with Especial Reference to the Distribution in the Lesion of *B. fusiformis* and *Spirochæte schaudinni*. Sir Aldo Castellani: Blastomycetic Ulcers. Dr. W. Broughton-Alcock: Spirochætal Ulcers of the Mouth and Skin. Dr. J. G. Thomson: The Pathology of Dermal Leishmaniasis. Members of these Sections of ([illegible] Dermatology, and Pathology a [illegible] attend and to take part in the subsequent discussion.

Friday.—10.30 A.M., Otology (Cases at 9.30 A.M.) Discussion: The Treatment of Lateral Sinus Thrombosis. Openers: Mr A. E. Peters and Mr. F. Wilson. Cases and specimens will be shown. 5 P.M., Laryngology. (Cases at 4 P.M.) Presentation of portrait to Sir StClair Thomson. Presidential address by Mr E. Musgrave Woodman. Cases and specimens will be shown by Mr E. Broughton Barnes, Mr Herbert Tilley, Mr E. D. D. Davis, and others. 8.30 P.M., Anæsthetics. Dr C. F. Hadfield: Modern Aids to Anæsthesia (Presidential address.) Members of the Section of Comparative Medicine are specially invited to attend.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

Friday, Nov. 4th.—8.30 P.M. (at the West London Hospital), Mr. O. L. Addison: Chronic Pyuria in Children.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

Tuesday, Nov. 1st.—5 P.M., Dr. Dugald Baird: The Upper Urinary Tract in Pregnancy. (Bradshaw lecture.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's inn Fields.

Monday, Oct. 31st.—5 P.M., Mr. R. Davies-Colley: Intestinal Cysts and Diverticula.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Oct. 31st, to Saturday, Nov. 5th.—Medical Society of London, 11, Chandos-street, Cavendish-square, W.1. Tues., 4 P.M., Series of Lectures on Renal Disease by Dr. A. Arnold Osman: Nephritis and Nephrosis. (Free to Members.)—Hospital for Sick Children, Great Ormond-street, W.C. Diseases of Children. Mornings only.—West End Hospital for Nervous Diseases, 73, Welbeck-street, W. A Course in Neurology, daily at 5 P.M., Oct. 31st to Nov. 26th.—Royal Westminster Ophthalmic Hospital, Broad-street, W.C. A Course in Ophthalmology. Afternoons: Oct. 31st to Nov. 19th.—10, Bedford-square, W.C. Dr. A. Knyvett Gordon will give a demonstration on Clinical Pathology (Epidiascope and Laboratory) on Wed. at 8.30 P.M. (Specially suitable for M.R.C.P. Candidates.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

Monday, Oct. 31st.—10 A.M., Skin Department, Surgical Wards. 2 P.M., Eye and Gynæcological Out-patients.

Tuesday, Nov. 1st.—10 A.M., Medical and Surgical Demonstrations. 2 P.M., Throat, Nose, and Ear Out-patients. 4.15 P.M., Lecture, Dr Owen: The New-born Child.

Wednesday.—10 A.M., Medical Wards, Children's Out-patients. 2 P.M., Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

Thursday.—10 A.M., Neurological Out-patients, Fracture Demonstration. 2 P.M., Eye and Genito-Urinary Out-patients. 4.15 P.M., Lecture, Dr. Shaw: Jaundice.

Friday.—10 A.M., Medical Wards, Skin Department. 2 P.M., Throat, Nose, and Ear Out-patients. 4.15 P.M., Lecture, Dr. R. Ironside: The Nervous System.

Saturday.—10 A.M., Medical Wards, Children's Out-patients, Surgical Wards.

Daily, 2 P.M., Operations. Medical and Surgical Out-patient Departments.

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

Monday, Oct. 31st.—5 P.M., Dr. G. B. Dowling: Mycotic Diseases.

Tuesday, Nov. 1st.—5 P.M., Dr. H. MacCormac: Diseases Due to Animal Parasites.

Thursday.—5 P.M., Dr. W. J. O'Donovan: Occupational Dermatitis.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, Oct. 31st.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Motor System.

Tuesday, Nov. 1st.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Intercranial Pressure.

Wednesday.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. Collier: Clinical Demonstration.

Thursday.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Motor System.

Friday.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: Psychoneuroses.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL POST-GRADUATE SCHOOL.

Wednesday, Nov. 2nd.—4 P.M., Dr. H. V. Morlock: Recent Advances in the Diagnosis of Pulmonary Disease.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

Friday, Nov. 4th.—4 P.M., Mr. C. Gill-Carey: Foreign Bodies in the Food and Air-passages.

ST. PETER'S HOSPITAL FOR STONE, POST-GRADUATE COURSE, Henrietta-street, Covent Garden, W.C.

Wednesday, Nov. 2nd.—3 P.M., Mr. J. Swift Joly: Vesical Calculus.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

Wednesday, Nov. 2nd.—4.30 P.M., Mr. R. H. Jocelyn Swan: Hæmaturia.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

Thursday, Nov. 3rd.—9 P.M., Mr. St. J. D. Buxton: *Injuries of the Hand.*

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham, S.W.

Wednesday, Nov. 2nd.—4 P.M., Dr. Stanley Wyard: Medical Progress 1932.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

Wednesday, Nov. 2nd.—4 P.M., Mr. M. Donaldson: The Cancer Problem in Relation to the General Practitioner.

Thursday.—4 P.M., Dr. R. M. Stewart: Causation of Mental Deficiency.

CHADWICK PUBLIC LECTURES.

Tuesday, Nov. 1st.—5.15 P.M., (at the Royal Society of Tropical Medicine and Hygiene, 26, Portland place, W.), Prof. Keilstra (Leyden): Hygiene in the Far East.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

Tuesday, Nov. 1st.—4.15 P.M., Dr. A. Ramsbottom: Treatment of Indigestion.

Friday.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Manchester.

Thursday, Nov. 3rd.—4.15 P.M., Mr. P. G. McEvedy: Infection Treatment.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

Wednesday, Nov. 2nd.—4.15 P.M. (at the Royal Hospital for Sick Children), Prof. G. B. Fleming: Pneumonia in Infancy and Childhood.

Appointments

Beresford, A. L., M.B., Ch.B. Liverp., has been appointed Certifying Surgeon, under the Factory and Workshop Acts, for the Glyn Ceiriog District, Denbigh.

Condy, E. M., M.B., B.Ch. Belf., D.P.H., Medical Officer, Caledon Dispensary District, Tyrone.

Gemmell, A. A., M.D. Camb., F.R.C.S. Edin., Gynæcological and Obstetrical Surgeon, David Lewis Northern Hospital, Liverpool.

Reid, Margaret S. M., M.D., Ch.B., D.P.H., Resident Medical Officer, Isolation Block, Queen Charlotte's Hospital, Hammersmith.

London County Council: Gunn, A. L., F.R.C.S. Edin., M.D. Wales, Senior Assistant Medical Officer, Grade II., St. Leonard's; Harley, H. C., B.M., B.Ch. Oxf., Assistant Medical Officer, Grade I., Lewisham; Leiper, E. J. R., M.B., Ch.B. Aberd., Assistant Medical Officer, Grade II., St. Stephen's; Madel, G. A. M., L.R.C.P., M.R.C.S., House Physician, St. James's; and Weinstein, Celia, L.R.C.P., M.R.C.S., House Physician, Lewisham.

NOTES, COMMENTS, AND ABSTRACTS

A GRUESOME FAMILY

THERE recently appeared at the Clerkenwell police-court, on a charge of larceny, a lad of 18, accompanied by a younger lad whom he was said to have led into trouble. The magistrate, Mr. Claud Mullins, instituted inquiry into the family history of the elder boy, whose low mentality was apparent to him. He asked the boy's father how many other children he had, a question which the father was unable to answer promptly; but he made calculations on his fingers, eventually arriving, with the help of the magistrate, at a total which proved to be wrong. The father was out of work, and could not read the words of the oath. On the boy coming before the court later, on remand, the magistrate read out some of the information which he had received, to the following effect. The father, aged 62, was living with the mother and 11 of his children and grandchildren in two rooms. Certain of his children were adults, and six adults with four children were sleeping in one room. The father's family had been made up as follows: (1) Daughter, 32, attended mental deficiency school as a child, married, with children, one of whom is at M.D. school. (2) Daughter, 31, married; one child at M.D. school. (3) Daughter, 30, married. (4) Son, 28, attended M.D. school, married, and wife deserted him; three children, two stammerers, and one with very bow legs. (5) Daughter, 26, attended M.D. school, married. (6) Daughter, 24, attended M.D. school. (7) and (8) Twin boys, died in infancy. (9) Son, 22, attended M.D. school, on dole. (10) Boy, died of scarlet fever in infancy. (11) Son, 18—the prisoner. He attended M.D. school and left "able to read two-syllable words with difficulty." Said to be "lazy, self-willed, and subject to occasional violent outbursts of temper." Was constantly truanting or late. Prison doctor now certified him as feeble-minded. (12) Boy, died at five days of "hæmorrhage." (13) Boy, 16, out of work; has exhausted his dole. (14) Daughter, 13, a diphtheria-carrier, and now in the fever hospital. The mother stated that so far she had 19 grandchildren.

MATERNITY IN THE AUSTRALIAN BUSH

IT may be recalled that, at the end of 1927, after a two years' inquiry into the causes of maternal mortality and morbidity in the State of Victoria, Dr. R. Marshall Allan published the surprising fact that 2273 confinements had been conducted between the years 1922 and 1927 by members of the Bush Nursing Association without a single maternal death. In an outline of the Association, recently written by the hon. secretary, Sir James Barrett, vital statistics for the years 1931–32 show that, though a mortality-rate of none per thousand has not been maintained, as indeed could hardly be expected, the rates, not only of maternal deaths, but also of neonatal deaths and stillbirths are far lower than those for the State as a whole, the figures per 1000 live births being:—

	B.N.A.	*State.*
Maternal death-rate.. ..	1·9	4·9
Neonatal death-rate.. ..	14·9	30·1
Stillbirth rate..	17·0	29·7

Actually there was one maternal death out of 948 deliveries. Bush nurses have always worked in close association with the medical profession, and the establishment of additional Bush nursing hospitals, and their popularity, have led to an increasing number of confinements taking place in these institutions. The percentage of patients receiving antenatal care is exceptionally high; in the year ended June, 1931, bush nurses attended 1044 maternity patients and gave antenatal advice to 893 of them. These nurses hold a threefold certificate—for general nursing, midwifery, and infant welfare. They are also skilful in gaining the confidence of their patients and persuading them to visit a doctor for antenatal examination. This team-work results in timely recognition of abnormality or a risk of it, followed by prompt treatment.

A STAFF OFFICER'S TRAVELS.

Dr. J. Johnstone Redmond sends us some interesting particulars taken from the diary of his grandfather, Gabriel Redmond, M.D., a former inspector-general of military hospitals. In 1812 this officer was ordered to Canada to inspect and report on the military hospitals, England then being at war with the United States. He left Spithead on August 27th and arrived at Quebec on Oct. 10th after a stormy voyage during which they were attacked by an armed privateer. In those days officers supplied their own rations to a large extent, and Redmond for his own party—consisting of wife, child, maid, and manservant—took on board the following provisions: one dozen port wine, two dozen Madeira, five dozen porter, one goat, three sheep, and three dozen and nine fowls, together with salt beef, salt pork, biscuit, oatmeal, pease, flour, sugar, coco, and two quarts of rum. During his tour of Canada he covered in open wagons, open boats, on sloops of war, in sledges, carriages, and stage coaches, but mostly on horseback, a total of 1354 miles.

Vacancies

For further information refer to the advertisment columns

[illegible] *ty Borough.*—Asst. M.O. £500.
[illegible]—Second H.S. At rate of £140.
[illegible] *Monk's Orchard, Beckenham, Kent.*—[illegible]nologist.
Birmingham and Midland Ear and Throat Hospital.—Asst. Surg. O. £200.
Birmingham, Dudley-road Hospital.—Jun. Asst. M.O.'s. All at rate of £200.
Blackpool C[illegible]—Asst. School M.O. £550.
Bolingbroke [illegible] *Common, S.W.*—Clin. Asst., Ear, No[illegible] £100.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £150.
Colchester, Royal Eastern Counties Institution, &c.—Res. Asst. M.O. £350.
Croydon General Hospital.—Asst. Physician.
Greenwich, Dreadnought Hospital.—Asst. Radiologist. 50 gns.
Grosvenor Hospital for Women, Vincent-square, S.W.—Two Hon. [illegible]
Herefordsh[illegible] Surgeon.
Hospital f[illegible] *Maida Vale, W.*—Hon. Surge[illegible]nt Department.
Hull Mun[illegible] *Infant's Hospital.*—Jun. Res. M.O. £100.
[illegible] Res. Cas. O. £200.
[illegible]—Jun. H.S. At rate of £150.
[illegible]*tal.*—H.S. At rate of £100.
[illegible]rst Asst. and Reg. £300.
London Jewish Hospital, Stepney Green, E.—Res. M.O. and Cas. O. Each at rate of £150. Also Jun. Res. M.O. At rate of £100.
Mi[illegible]*dical School, W.*—Medical and Surgical [illegible] £300.
N[illegible] *Velfare Centre, 12, Telford-road, W.*—[illegible]
Queen Mary's Hospital for the East End, E.—H.S. £120.
Rochdale Infirmary an[illegible] H.S. £200.
Royal Chest Hospital, [illegible] M.O. and H.P. At rate of £150
Royal Free Hospital, [illegible]—Asst. M.O. for V.D. Dept. £350 [illegible] Registrar and First Asst. in Children's Dept. Each at rate of £100.
St. John's Hospi[illegible] *49, Leicester-square, W.C.*—Two [illegible]
St. Mary's Hosp[illegible]nt Asst. £250.
Southend-on-Sea [illegible]
University Colle[illegible] *W.C.*—First Asst. for Children's Dept. [illegible]
Wakefield Mental Hospital.—Asst. Officer. £350.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Med. Staff, Ophth. Surgeon.
Willesden Urban District Council.—M.O. £600.
Worcester General Infirmary.—Third Res. M.O. £120.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Exmouth (Devon); Southminster (Essex); and at Wantage (Berks.)

ADDRESSES AND ORIGINAL ARTICLES

THE UPPER URINARY TRACT IN PREGNANCY*

BY DUGALD BAIRD, B.Sc., M.B. GLASG., M.C.O.G.

ASSISTANT TO THE MUIRHEAD PROFESSOR OF OBSTETRICS AND GYNÆCOLOGY IN THE UNIVERSITY OF GLASGOW; ASSISTANT PHYSICIAN TO THE GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL; AND ASSISTANT GYNÆCOLOGIST TO THE GLASGOW ROYAL INFIRMARY

IT has been long recognised that dilatation and stasis of the upper urinary tract occur frequently in pregnancy, but although much information about the nature of the change has been gained recently through the development of urological methods, its significance and cause are not yet fully understood. One of the earliest workers on the subject was Opitz,[1] who came to the conclusion from the examination of post-mortem material that the condition was due to compression of the ureter, especially the right, between the uterus and the structures at the pelvic brim. The work of Carson [2] and others supports this view. The observation that the dilatation in some cases extends throughout the whole length of the ureter led Stoeckel [3] and others to believe that it was due to a general atony of the urinary tract. Hofbauer [4] found a definite hyperplasia of the wall and sheath of the ureter at its lower end and believes that this constitutes an obstruction to outflow at the bladder, causing the dilatation of the ureter throughout its whole length. More recently by the application of urological methods much interesting work has been done, especially in Germany, on the relationship of this anatomical change to disorders of function. Gremme [5] comparing the views of the various workers comes to the conclusion that there is atony of the upper urinary tract in pregnancy which makes it possible for the ureter, especially the right, to be compressed between the uterus and the psoas muscle, that dilatation of the urinary tract does not necessarily mean the presence of stasis, and that there may be delay in emptying the upper urinary tract without the kidney function being affected.

The problems we are confronted with are, the cause of the primary atony which appears to be the chief factor in the production of the dilatation, what effect these changes which occur in pregnancy have on ureter and kidney function, and what bearing they have on the occurrence of infection, with particular reference to pyelitis of pregnancy. Towards their solution I have attempted an investigation from every aspect, and in this lecture I wish to correlate the results obtained by post-mortem, clinical, and urological examinations.

Post-mortem Examination

NAKED-EYE APPEARANCES

The ureters in 102 women, who have died during pregnancy or within a few days of delivery, have been examined. Eighteen were less than seven months pregnant and are not included in the first analysis.

From Table I. we see that 85 per cent. of these cases show some dilatation of the right urinary tract and 72 per cent. some dilatation of the left. Dilatation, as is generally recognised, is more marked on the right side but, contrary to what has often been stated, is more marked in primigravidæ than in multiparæ. The right ureter shows a one-plus dilatation or more in 69 per cent. of the primigravidæ and in only 25 per cent. of the multiparæ. The same thing is seen on the left side.

In 48 cases the distortion was of the type which I consider to be characteristic of pregnancy. It is asymmetrical. On the right side the ureter is dilated from the pelvic brim upwards and is markedly elongated and kinked. The kinks vary in number and distribution, but the most common site is the junction of the upper and middle thirds. They may be very acute and cause marked narrowing of the lumen. They are sufficiently permanent to remain after removal of the tract from the body, but histologically the trabeculæ keeping the loops in position are seen to be very slender. The dilatation also affects the kidney pelvis and calyces. Below the pelvic brim there is often no dilatation of the ureter or, if present it is seldom marked, so that at this level an abrupt narrowing of the lumen usually occurs. On the left side some dilatation is usually present but it is more uniform throughout the length of the ureter, extending down to the bladder so that there is no abrupt demarcation at the pelvic brim, such as is present on the right side, and the left ureter may actually be more dilated than the right just below the pelvic brim. Occasionally the dilatation of the left urinary tract also is marked, in which case the deformity on the left side resembles that typical of the right side. As a general rule where the dilatation was marked on the right side, it was pronounced also on the left to a less degree, but occasionally, where the right urinary tract was enormously dilated, the left showed only a very slight dilatation. This point is illustrated in Fig. 1.

TABLE I

Dilatation.	Primigravidæ (32).			Multiparæ (52).		
	Right.	Left.		Right.	Left.	
None.	2	5		10	18	
± − −	2	7		4	13	
± −	6	7		24	12	
+	12	10		7	6	
+ +	8	1		5	2	
+ + +	1	2		2	1	
+ + + +	1	0		0	0	
+ to + + + +	69 %	40·6 %		25 7 %	17·3 %	

Dilatation of + indicates a urinary tract with a total capacity kidney and ureter of 20–30 c.cm.; + + 30–50 c.cm.; + + + 50–70 c.cm., and + + + + over 70 c.cm. One + therefore represents a fairly marked dilatation.

In six cases the dilatation was more marked on the left than on the right.

In the 18 patients who died at or before the sixth month 27 per cent. showed a one-plus dilatation of the right ureter and 11 per cent. a one-plus dilatation of the left. The primigravidæ had greater degrees of dilatation than the multiparæ. Minor degrees of dilatation are not easily assessed by this method.

The cause of death did not appear to bear any relationship to the amount of dilatation present except in cases of toxæmia, where it was consistently very slight. There were 14 multiparæ who died of toxæmia, including eclampsia, albuminuria, and ante-partum hæmorrhage. None of these showed a one-plus dilatation, most showing very little at all. For the rest of the multiparæ in this series, the incidence of one-plus dilatation was 40 per cent. This corresponds with the urological finding that there is an absence of delay in excretion in the toxæmic cases. Anselmino, Hoffman, and Kennedy[6] have shown that, in the toxic albuminuria of pregnancy and eclampsia, there is an over-production of the hormones of the posterior pituitary gland. It is probable that this is the factor which prevents atony of the urinary tract in these cases.

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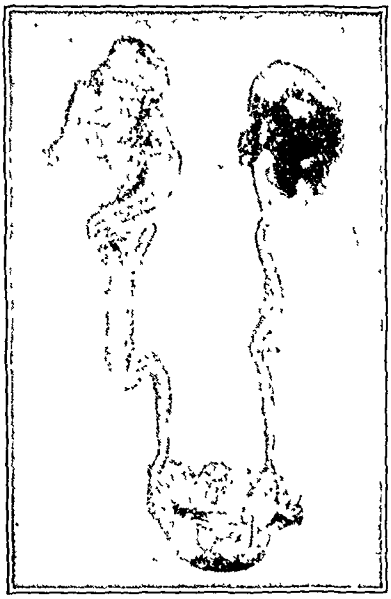
* The Bradshaw lecture delivered before the Royal College of Physicians of London on Nov. 1st.

FIG. 1



Urinary tracts in a 5-para, who died undelivered of placenta prævia at term, and in whom the urine was sterile.

MICROSCOPICAL EXAMINATION

The striking microscopical feature in the lower part of the ureter during pregnancy, as was first demonstrated by Hofbauer, is the excessive hypertrophy of the ureteral sheath, which in the non-pregnant state is a very thin structure. The individual muscle bundles are hypertrophied and there is a proliferation of fibrous tissue between them, converting the ureter into a rigid tube. The same changes are also seen in the wall of the ureter. They are found to the most marked degree in the juxtavesical portion but also to a less extent higher up the ureter. Both ureters are affected and primigravidæ as much as multiparæ. The amount of hypertrophy varies greatly in different cases and does not always correspond to the amount of dilatation present. It was absent in the cases who had died in the early months of pregnancy. Transverse sections of dilated ureters at the widest part show little evidence of hypertrophy, the wall being thinned out and the muscle-fibres stretched.

Even where there is marked dilatation of the kidney pelvis and calyces on one side only, no microscopic difference has been detected between the two kidneys, although from tests on the living a similar degree of dilatation appears to have a definite effect on function.

It appears therefore that, in the later months of pregnancy, the right ureter is frequently obstructed at the pelvic brim. A careful examination in women who have died undelivered or in the living before performing Cæsarean section shows that the ureter can be compressed between the uterus and the psoas muscle on the right side. In some cases the compression seems to be between the uterus and the common iliac artery which on the right side, as it has to cross the vertebral column, lies more anteriorly than on the left and pushes the ureter forwards. At Cæsarean section, flexing the thigh to relax the psoas muscle relieves the compression of the ureter to some extent. This may explain the partial relief of pain experienced by some pregnant women on flexing the thigh. On the left side the ureter is less exposed to pressure for several reasons. In the first place, because of the difference in the course of the common iliac vessels on the two sides, it lies more posteriorly on the left and, instead of crossing the vessels almost at right angles as on the right side, it runs almost parallel to them. It is therefore partly protected from pressure at the pelvic brim by the promontory of the sacrum. Secondly, the left ureter at the pelvic brim passes behind the sigmoid colon and its mesentery. The peristalsis of the bowel makes any pressure on the left ureter intermittent and may directly stimulate ureteral peristalsis. I think these anatomical observations explain the difference on the two sides in the second half of pregnancy. Hofbauer is of the opinion that the hyperplasia of the lower ends of the ureters causes the dilatation and, in support of this, he states that pyelograms taken post partum show that the dilatation does not stop short at the pelvic brim but extends down to the bladder. He explains the difference on the two sides as due to the dextro-rotation of the uterus during pregnancy, kinking the rigid lower end of the right ureter while the left is merely put on the stretch. I have found at Cæsarean section that the uterus is sometimes twisted to the left and that in these patients the dilatation is not more marked on the left side. Considerable dilatation of the urinary tract may be present between the fourth and fifth months, when the proliferative changes are very slight. It seems more likely that the changes described are in the nature of a protective mechanism to prevent undue compression of the lumen of the ureter by the descending head. Further, in the non-pregnant state ovarian cysts can be shown to cause dilatation of the ureters. Comparing the dilatation in the later months of pregnancy with that produced by an ovarian cyst of the same size and in the same position, we find that it is much less in the latter and accompanied by very little atony. As the cyst is usually situated to one side, it causes dilatation of the ureter on that side. If the cyst is so large as to cause uniform pressure in all directions, the right ureter is always more affected than the left. This is illustrated in Fig. 2, which is an intravenous pyelogram from such a case. The right urinary tract will be seen to be dilated from the pelvic brim upwards but there is complete absence of kinks of the ureter and chromocystoscopy shows very little atony, although there is delay in the appearance of the indigo-carmine. The right ureter is therefore more liable to pressure than the left in both the non-pregnant and pregnant states. This is due, in all probability, to the different course of the two ureters as they cross the pelvic brim and not to the uterus twisting to the right.

Urological Examination

The *methods* employed comprise cystoscopy, chromocystoscopy, pyelography, and separate kidney function tests.

Chromocystoscopy is particularly useful in pregnancy, for generally there is an absence of vigour in the ureteral peristalsis which makes the efflux difficult to see unless stained by dye. Delay in appearance of the dye, which is in good concentration when it does appear, suggests atony of the ureter without dilatation or kidney damage. Poor concentration of the dye suggests either kidney damage or marked dilution of the dye in a dilated urinary tract. If due to kidney damage alone the indigo-carmine excretion time will be within normal limits, but the dye will not reach satisfactory concentration. If due to dilution alone, there will be a steady improvement in the concentration of the indigo-carmine after its first appearance, and there will be a characteristic variability in the size of the efflux. If dilatation is accompanied by atony, as is common during pregnancy, the ureteral action is much more irregular. There is great variation in the size of the efflux, and long periods of rest are followed by periods of great activity when contractions follow one another at very short intervals; so that there may be great variation in the same case in the indigo-carmine excretion time, depending on whether the dye is given during a period of rest or one of activity.

Intravenous pyelography has great advantages over the older one of retrograde pyelography. Firstly, artificial distortion of the urinary tract and any risk which may be attached to ureteral catheterisation are avoided. Secondly, the time of appearance of the shadow of the renal pelvis gives us valuable information about kidney function and the relative efficiency of the two sides. In the normal non-pregnant state it is difficult to obtain satisfactory shadows of the ureters by this method but during pregnancy the stasis in the ureter is usually sufficient to obviate this difficulty. Intravenous pyeloscopy is unsatisfactory during pregnancy, owing to the thick abdominal wall and to the relatively faint shadow obtained, but by combining the results of chromocystoscopy and pyelography, the various changes in the structure and function of the urinary tract in pregnancy can be deduced. Pyelograms are taken at intervals after the intravenous injection of uroselectan or abrodil.

Kidney function tests.—A complete urea-concentration test on separate kidneys is not possible during pregnancy, because catheters cannot be left in during the whole course of such a test, as if inserted above the pelvic brim the natural state of the urinary tract is interfered with and if below they cannot cope with the intermittent emptying of the dilated tract so that urine escapes past them. Information regarding the kidney's power to concentrate urea has to be obtained from isolated specimens.

An analysis of 100 cases (including normal pregnancies and various complications except infection) examined once during the pregnancy and 66 cases (all normal pregnancies) examined at monthly intervals during pregnancy shows that from the fourth month onwards, especially in primigravidæ, there is a definite delay in excretion, due either to atony alone or to atony accompanied by dilatation. Table II. is an analysis of the 66 cases examined at monthly intervals.

TABLE II

Months pregnant.	Primigravidæ.		Multiparæ.	
	Right.	Left.	Right.	Left.
Over 2 ..	5 mins.	4·3 mins.	4·1 mins.	4·0 mins.
„ 3 ..	4 „	4·6 „	5·4 „	4·5 „
„ 4 ..	8 „	6·0 „	6·8 „	4·2 „
„ 5 ..	11·4 + „	6·0 „	6·7 „	4·3 „
„ 6 ..	11·4 + „	6·5 „	5·7 „	4·5 „
„ 7 ..	10·4 + „	6·3 „	7·0 „	5·0 „
„ 8 ..	7·6 + „	5·0 „	6·7 „	5·0 „

The numbers represent the indigo-carmine time in minutes. + indicates that in several of the cases the dye had not appeared at the end of the observation period.

As already stated, the indigo-carmine excretion time alone may be misleading, so that the actual times shown on the Table must not be taken literally. It will be seen that in primigravidæ the delay in excretion begins at the fourth month, reaches a maximum at the fifth and sixth months, and diminishes towards term. The delay is more marked on the right side. In multiparæ, this Table shows slight delay at the right side but no definite maximum period, and on the left side there is a striking absence of delay in excretion at any stage of pregnancy.

Table III. is an analysis of 37 cases, 16 primigravidæ and 21 multiparæ, selected because of excellent general health and past history, who were examined at monthly intervals during pregnancy. There was some degree of dilatation in 62·5 per cent. of the primigravidæ as compared with 42·8 per cent. of the multiparæ, in whom the dilatation was usually slight. Delay in excretion, like dilatation of the urinary tract, is more frequent and more pronounced in primigravidæ.

TABLE III

Delay.	Primigravidæ.	Multiparæ.
Marked	3 }	3 }
Moderate ..	5 } 62·5 %	0 } 42·8 %
Slight	2 }	6 }
None	6	12

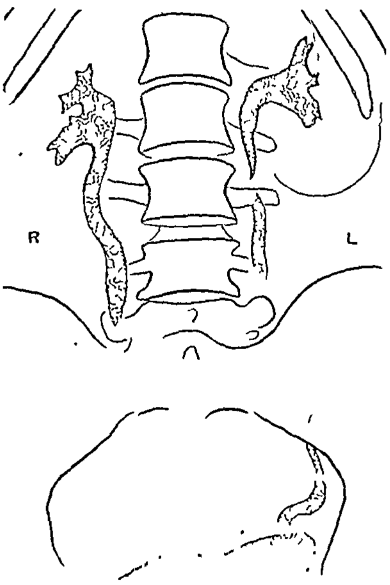
Where the delay in excretion is moderate, a catheter passed into the right ureter after the dye has appeared from the left ureteral orifice will tap the dye as soon as it passes the pelvic brim. Where the delay in excretion is very marked, a catheter passed into the right kidney pelvis will drain urine still unstained by indigo-carmine. If the upper urinary tract is drained by introducing a catheter to a point above the pelvic brim for some minutes before injecting the dye, the excretion time is markedly improved. The site of the obstruction to outflow, which is the cause of the back-pressure on the kidney susbtance, is therefore at the pelvic brim.

As has been pointed out in the examination of post-mortem specimens, the dilatation usually affects, on the right side, the kidney pelvis and calyces as well as the ureter, whereas, on the left side, it is more often confined to the ureter. Intravenous pyelograms show this to be the case in the living. Where there is considerable dilatation of the calyces, there is also delay in appearance of the shadow, indicating delay in excretion through the kidney substance, that is, interference with kidney function. In such a case there is usually also a further delay in appearance of the shadow of the kidney pelvis and ureter, indicating stasis in the urinary tract. The left urinary tract may show right down to the pelvic brim, while on the right side the calyces are only beginning to appear. In the absence of infection, there may be marked dilatation of the calyces with only slight delay in excretion through the kidney substance, whereas, in cases of pyelitis of pregnancy, there may be little dilatation of the calyces present with very marked delay in excretion through the kidney substance. Many of those cases then are probably pyelonephritis and not simply pyelitis.

The urea-concentration test adds information regarding the effect of this dilatation on kidney function. If during a urea-concentration test urine is taken during the second hour from either kidney, the concentration of urea on the left, relatively undilated side, is always higher than on the dilated right side, while one hour later the urea concentration on the left side has fallen and is lower than that on the right side which has increased, although it usually will not reach the maximum attained on the left side. In individual cases the results vary a great deal according to the time at which the specimens are taken and need care in interpretation. The delay in the concentration of urea by the right kidney in pregnancy is demonstrated in the examination of separate kidney specimens in 21 out-patients, in whom, although the indigo-carmine test showed the left kidney to be more efficient than the right, the urea concentration was higher on the right side than on the left in seven cases.

The usual sequence of events in pregnancy is as follows. At the beginning of pregnancy a primary atony of the ureters occurs. In some this is very slight and may be scarcely appreciable. In others it affects both ureters, equally in primigravidæ but in multiparæ it may be more pronounced on one side, usually the right, where presumably there has been a previous dilatation of a marked degree. At the third month the primary atony disappears. At the fourth to the fifth month delay in excretion occurs, usually most marked on the right side. At this stage the delay may be due to atony without dilatation but, more commonly, dilatation of the ureter above the pelvic brim can be demonstrated. The degree of stasis is not in proportion to the amount of dilatation present, as considerable *dilatation may be present* without any stasis. In some cases spasm of the ureter at the pelvic brim can be demonstrated at this stage, causing severe spasmodic pain over McBurney's point. In such cases there is marked activity of the urinary tract but delay in excretion occurs due to the spasm, and there is dilatation and kinking of the ureter above the site of the spasm. Where dilatation is accompanied by atony, pain is usually absent but, if present, is slight and of a dull aching character. The spasm of the ureter is probably the result of the pressure of the uterus, as it can be produced by an ovarian tumour of the same size. The stasis and dilatation become more pronounced until they reach a maximum usually at the sixth month. *From then until term elimination slowly* improves. On the left side, where the delay usually has been less marked, this improvement, which may be accompanied by a decrease in the amount of dilatation, is easily seen, but on the right side, when there has been very marked stasis and dilatation, there are technical difficulties in the way of *appreciating* moderate degrees of improvement. Within a very short time after delivery the ureters again show atony, although the excretion time may be improved. The following cases illustrate the various changes occurring in the *urinary tract*, *in* pregnancy which have been discussed above.

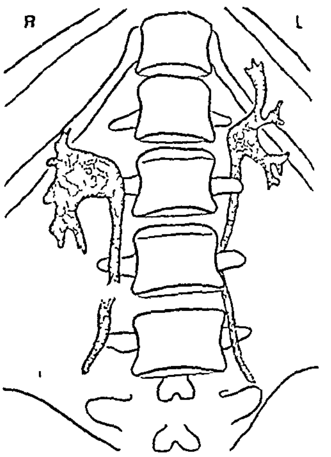
FIG. 3



CASE 1.—Mrs. A., a primigravida. At two and a half months delay in excretion of dye and evidence
of atony. Intravenous pyel
both ureters. At three and
culty in obtaining a pyelogr
function. At four and a
and a similar pyelogram obtained as at two and a half months. At six months developed a right-sided pyelitis, pain only slight. At seven months on left side indigo-carmine excretion time is now normal, although in pyelogram the left ureter is still dilated; right urinary tract more dilated from pelvic brim upwards (see Fig. 4).

CASE 2.—Mrs. B., 2-para. At three and a half months atony of ureters, but very little delay in excretion of dye. *At five and a half months marked delay in excretion of* dye with irregular action of ureters due to atopy. Intravenous pyelograms, taken at 5 and 20 minutes after injection, are seen in Figs. 5 and 6. Fig. 5 shows both renal tracts apparently normal, whereas Fig. 6 shows them markedly dilated. *The second plate was taken just before the ureters* emptied. The indigo-carmine excretion tests had previously shown that the quiescent period on each side was about 20 minutes. At term indigo-carmine excretion time at the left side normal, but marked delay at the right. Intravenous pyelogram (Fig. 7) *shows the left urinary* tract to be much less dilated than it was at five and a half months (Fig. 6), while the right is more dilated, with delay in excretion through the kidney which was not present at five and a half months.

FIG. 5



CASE 3.—Mrs. C., 3-para. At six and a half months indigo-carmine excretion time on both sides was six minutes and the action of the right ureter is regular although, as is seen in Fig. 8, it is markedly dilated and kinked.

CASE 4.—Mrs. D., primigravida. At three and a half months sudden severe pain over appendix region. Fig 9 shows the intravenous pyelogram taken *50 minutes after* injection. There is spasm of the right ureter at the pelvic brim. The ureteral catheter could not be inserted beyond this point. In the previous plate at 30 minutes the uroselectan had not reached the ureter on the right side, while the left ureter showed distinctly on the plate taken at seven minutes.

Infection

Although stasis can occur in the urinary tract in pregnancy without infection, a clinical study shows that there is a close relationship between the time of onset of stasis and the time of onset of infection, the so-called pyelitis of pregnancy. This is well illustrated in Table IV. In primigravidæ the time

TABLE IV

—	Under 3 mths.	3–4 mths.	4–5 mths.	5–6 mths.	6–7 mths.	7 + mths.	No definite time of onset.
			70 %				
Primigravidæ	8	1	50	33	9	13	4
Multiparæ ..	30	17	28	34	36	28	23
			31 %				

of onset of infection is remarkably constant, 70 per *cent. occurring* between the fourth and sixth months of pregnancy, whereas in multiparæ the time of onset is much more variable. As has already been shown, this is also the case for the time of onset of stasis. In 6 of the 8 primigravidæ and 17 of the 30 multiparæ, in whom the symptoms of infection appeared at or before the third month, a history of previous infection was obtained. In these cases the primary atony, described above, was probably responsible for the lighting-up of the previous infection at this early stage of the pregnancy.

As *the stasis is more* marked in primigravidæ one would expect the infection to be more severe, and this is found to be the case. In a large series the incidence of premature delivery, either spontaneous or induced, was twice as high in primigravidæ.

INCIDENCE OF INFECTION

It is difficult to obtain figures to determine the risk of infection of the urinary tract in pregnancy in previously healthy women. Of 135 women who had a catheter specimen of urine examined at monthly intervals during the pregnancy, 96 had sterile urines at the first visit in the second month of pregnancy and of these, 14, or 14·5 per cent., developed pus and organisms in the urine at one time or another during the pregnancy, 6 of these had symptoms suggesting pyelitis, 2 cystitis, and the rest, in whom infection was slight and transient, had no symptoms. The relative frequency of pyelitis of pregnancy in the antenatal wards of a maternity hospital can be readily determined and is shown in Table V. The first column represents the incidence of the various complications in 1000 consecutive cases, admitted over a period of three years to the antenatal wards of one unit of the Glasgow Royal Maternity Hospital, representing a third of the total admissions to the antenatal department, so that numerically it corresponds to a single year for the whole hospital. The figures for my series indicate that pyelitis is one of the most frequent complications of pregnancy, reaching the high figure of 15·6 per cent., whereas the official report estimates the incidence at half this figure, and indeed before 1928 it was diagnosed so infrequently as to be classed with the miscellaneous group of complications. The figures for the other complications, except albuminuria, agree fairly closely in the two series and the explanation of the disparity is probably faulty diagnosis. In my series only 63, or 40 per cent., of the pyelitis cases were correctly diagnosed before admission. The various diagnoses were as follows:—

TABLE V

—	My series of 1000 cases.	Annual hospital reports.				
	1928–29–30	1926	1927	1928	1929	1930
Pyelitis	15·6	—	—	7·3	7·4	8·4
? Pyelitis	10·1	—	—	—	—	—
Abortion	15·2	17·6	19·1	14·7	20·5	16·7
Albuminuria ..	12·6	20·8	20·4	17·5	17·9	21·0
C.P.	9·6	13·4	11·1	10·0	9·8	12·7
Hyperemesis ..	7·5	6·5	5·7	7·7	8·1	9·2
Cardiac	5·1	6·0	5·9	6·1	5·5	8·4
A.P.H.	4·2	6·2	14·5	14·0	5·9	5·9

The "? pyelitis" group represent those cases in which there was a urinary infection the importance of which was doubtful.

	Cases.
Pyelitis	63
Albuminuria	30
Hyperemesis	11
Premature labour ..	8
Contracted pelvis .	5
Debility	6
Pleurisy .. .	6
Threatened abortion ..	6
Cardiac disease ..	4
Placenta prævia ..	3
Renal calculus.. ..	3
Appendicitis	2
Influenza .. .	2
Hydramnios	2
Cystitis	2
Hæmaturia	2
Œdema . ..	1

FIGS. 2 4 6

CLINICAL FEATURES OF INFECTION

In the absence of urinary symptoms and where the toxæmic symptoms are predominant, the condition is very liable to be wrongly diagnosed as albuminuria or hyperemesis. A microscopical examination of the urine should always be done as a routine measure in the diagnosis of any toxæmia of pregnancy. It is difficult to see why pyelitis should be wrongly diagnosed so often as albuminuria, as the latter is characterised by œdema, rise in blood pressure, and albumin in the urine and no pus, while in pyelitis there is never any œdema or rise of blood pressure (which may, in fact, be lowered), and seldom more than a faint trace of albumin.

Pain and tenderness referable to the urinary tract may be very misleading, as severe infection may be present without either, or both without infection. Classifying the 156 cases of pyelitis in the 1000 series accurately according to the pain distribution, the incidence of infection on the two sides is found to be right side 76, left side 25, bilateral 36, while 19 were toxic or latent. As a test 30 cases were examined urologically to compare the clinical diagnosis with the urological findings, with the following results. Thirteen were diagnosed clinically as right-sided, but urologically only four were right-sided, the rest being bilateral. Six were clinically left-sided, and urologically all were bilateral. Eleven were clinically bilateral, and urologically only eight of these were bilateral, the other three having right-sided infection only, pain and tenderness being present on the left side without infection. Clinically, then, the infection is diagnosed as bilateral in only 36 per cent. of cases, whereas actually, as proved by urological examination, it was bilateral in 76 per cent. Pyelograms of infected cases offer a possible explanation of the variable clinical findings.

In a typical attack of acute pyelitis of pregnancy with marked pain and tenderness there is only a moderate degree of dilatation of the ureters and kidney pelves. Kinks of the ureter are found either at the junction of the ureter and kidney pelvis, in which case the ureter may not open into the most dependent part of the kidney pelvis or at the junction of the upper and middle thirds of the ureter. The distribution of the pain corresponds to the situation of the kinks, and the pain is probably due to spasm set up at these points by the partial blockage. As the pain is instantly relieved by passing a catheter to a point immediately above the pelvic brim, the blockage and spasm in the upper part of the ureter must be dependent on obstruction at the pelvic brim. This is illustrated in Fig. 10.

This is an intravenous pyelogram of a 3-para, five and a half months pregnant, suffering from acute pyelitis. Although her severe pain was confined to the right kidney region, the insertion of a catheter to a point just above the pelvic brim caused the pain to disappear almost at once, and leaving the catheter in this position for two days was followed by rapid improvement in the patient's general condition and by an immediate fall in the temperature and pulse-rate.

Besides relieving the pain and acute blockage in the urinary tract in such a case, drainage by a catheter in this position also improves the function of the kidney, as is illustrated by the following experiment.

Mrs. E., 3-para, a case of bilateral pyelitis, had an intravenous pyelogram taken at four months, when a five-minute plate showed no shadow on either side. A 20-minute plate showed gross dilatation of both urinary tracts with delay more marked on the left side (Fig. 11). The X ray examination was repeated, and on this occasion the kidney pelves were drained for two hours by ureteral catheters before injecting the uroselectan. As will be seen in Fig. 12, a dense shadow of the calyces on the right side and a faint shadow on the left side showed in a five-minute plate.

If infection supervenes in a urinary tract which is already markedly dilated, the symptoms are seldom acute, although there may be a remittent fever. The pain is transitory and dull and aching in character. In this type of case lack of drainage due to stasis leads to toxic absorption with symptoms of nausea and vomiting, emaciation, and anæmia. This is the type of case which is often undiagnosed. Fig. 13 is an intravenous pyelogram from such a case.

This is a case of bilateral pyelitis in a multipara, who on admission had no symptoms referable to the urinary tract and showed marked toxæmia. This pyelogram was taken one and a half hours after the injection of uroselectan, as it was only then that a satisfactory picture of the left urinary tract could be obtained. The kidney function on the right side was so poor that no shadow was obtained, even after this long interval.

Where the urinary tract is completely atonic, pain is absent although infection may be so severe that there is almost complete interruption of kidney function. Cases have been encountered which, although the pain and tenderness were present only on the left side, the condition on that side was much *less severe than on the right,* where solid pus was evacuated from the kidney pelvis.

A careful history usually elicits the fact that earlier in the illness pain and tenderness were present on the right side also. Presumably the pain has disappeared as the tone of the urinary tract has been destroyed, for the pus lodging in the urinary tract aggravates the existing atony and if it is not evacuated by some means or other, the tract quickly beco quite atonic. Infection can exist where there is very little stasis, as often happens on the left side. The greater degree of stasis on the right side explains why, although the infection is usually bilateral, it is more severe on that side.

The condition is probably a pyelonephritis in th cases where the toxæmia is profound, with sickn jaundice, and prostration the prominent features, at post-mortem examination abscesses have b found in the kidney substance of patients who a history of this type. How far the kidney substa is involved in the less severe cases is difficult to

re is ly marked interference with ki

e infection is confined to the ri

of urea on that side is alw

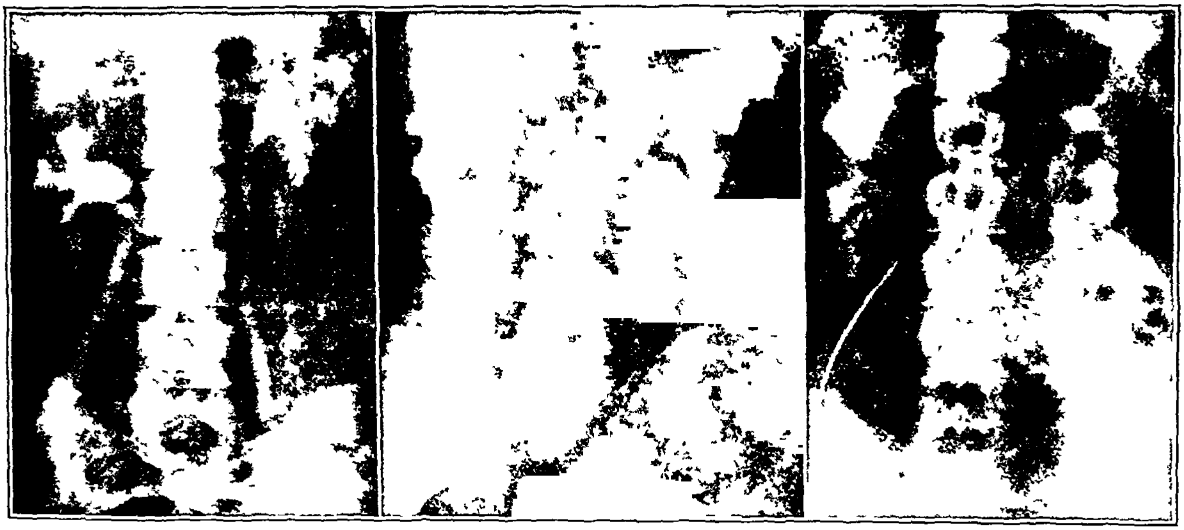
FIGS. 7

8

9

very much lower than on the non-infected side, but a total bladder urea-concentration test is within normal limits. In 19 cases with moderately severe bilateral infection, a MacLean's urea-concentration test was done. The maximum concentration of urea, which was always delayed until at least the third hour, was under 2 per cent. except in one case. These points have a definite bearing on prognosis and treatment.

FIGS. 10 11 12



Treatment

The routine treatment of pyelitis of pregnancy in hospital consists of confining the patient to bed and giving if possible at least five pints of fluid in 24 hours, along with large doses of alkalis, until the urine is alkaline. In most cases under this treatment the acute symptoms subside. Light diet is then allowed and the patient is given urinary antiseptics till the end of pregnancy. Under this treatment however the urine practically never becomes sterile before the end of pregnancy and of 104 cases who were traced to the end of pregnancy out of 156 consecutive cases of pyelitis admitted, 34, or 32·6 per cent., did not go to term. Apart altogether from any consideration of after-results this treatment is only partly successful from the point of view of the pregnancy. Of the 34 patients who did not go to term 3 died (in one cardiac disease was probably the primary cause of death). In 5 cases labour was induced and 11 went into labour spontaneously before the seventh month. Eleven went into labour between the seventh and eighth months and 7 in the last month of pregnancy. It will be seen therefore that there is urgent need of earlier and more efficient treatment. Recently Crabtree and Prather [7] in an experience of treatment of pyelitis extending over ten years have found that raising the fluid intake to a maximum is the most important single factor and, if efficiently carried out, enables the patient to go to term without hospital treatment. The value of this treatment can be demonstrated by withholding fluids, when within a few hours an exacerbation of the symptoms will occur.

Posture plays a part. As already stated, at Cæsarean section operations it has been observed that flexion of the thigh causes relaxation of the psoas muscle, thereby diminishing the pressure on the ureter at the pelvic brim. Many patients suffering from pyelitis state that they feel much more comfortable when they draw up the knees and that they do not like the dorsal decubitus. Improvement in many cases, occasionally striking, has been observed by placing the patient on the hands and knees at frequent intervals, especially if this is accompanied by massage over the kidney regions and along the course of the ureters. As seen in chromocystoscopy, the massage stimulates the atonic ureters to contract. Elevation of the foot of the bed so that the ureters are acting against gravity has been found to cause an exacerbation of the symptoms where the tone is poor.

In certain cases a high fluid intake is impossible owing to persistent vomiting, brought about either by the very severe pain of an acute attack or by toxæmia in a neglected or inefficiently treated case. In such cases the improvement in the patient's condition can be most speedily brought about by renal lavage. A careful urological examination is made, including chromocystoscopy and catheterisation of the ureters, to arrive at an exact diagnosis and prognosis. (There seems to be little danger in this procedure. In 80 cases of pyelitis where catheters were passed to one or both kidneys only 2 showed any reactionary rise of temperature.) Renal lavage can be carried out at the same time. In *seriously* ill patients it has been found that a single renal lavage is not sufficient to bring down the temperature and pulse-rate, and in such cases indwelling catheters are much more effective. If the acute symptoms do not subside on the routine treatment of fluids and alkalis within a few days, or in a less acute case, if the pain and sickness persist so that the patient cannot rest or take sufficient fluid, then an indwelling catheter is inserted. If in a more chronic case there is debility, lack of appetite, loss of weight, and low fever an indwelling catheter is used. In an analysis of the results of treatment by indwelling catheter, in 38 cases improvement is assessed as being very marked, when it was so striking as completely to alter both the clinical picture and the prognosis. Twenty-three cases come into this category. Two of these were untraced and the remaining 21 patients were all able to carry on the pregnancy beyond the thirty-sixth week and were delivered of live children. They all made good recoveries. This is very satisfactory as clinically bilateral, and urologically only eight of these were bilateral, the other three having right-sided infection only, pain and tenderness being present on the left side without infection. Clinically, then, the infection is diagnosed as bilateral in only 36 per cent. of cases, whereas actually, as proved by urological examination, it was bilateral in 76 per cent. Pyelograms of infected cases offer a possible explanation of the variable clinical findings.

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This is an intravenous pyelogram of a 3-para, five and a half months pregnant, suffering from acute pyelitis. Although her severe pain was confined to the right kidney region, the insertion of a catheter to a point just above the pelvic brim caused the pain to disappear almost at once, and leaving the catheter in this position for two days was followed by rapid improvement in the patient's general condition and by an immediate fall in the temperature and pulse-rate.

Besides relieving the pain and acute blockage in the urinary tract in such a case, drainage by a catheter in this position also improves the function of the kidney, as is illustrated by the following experiment.

Mrs. E., 3-para, a case of bilateral pyelitis, had an intravenous pyelogram taken at four months, when a five-minute plate showed no shadow on either side. A 20-minute plate showed gross dilatation of both urinary tracts with delay more marked on the left side (Fig. 11). The X ray examination was repeated, and on this occasion the kidney pelves were drained for two hours by ureteral catheters before injecting the uroselectan. As will be seen in Fig. 12, a dense shadow of the calyces on the right side and a faint shadow on the left side showed in a five-minute plate.

If infection supervenes in a urinary tract which is already markedly dilated, the symptoms are seldom acute, although there may be a remittent fever. The pain is transitory and dull and aching in character. In this type of case lack of drainage due to stasis leads to toxic absorption with symptoms of nausea and vomiting, emaciation, and anæmia. This is the type of case which is often undiagnosed. Fig. 13 is an intravenous pyelogram from such a case.

This is a case of bilateral pyelitis in a multipara, who on admission had no symptoms referable to the urinary tract and showed marked toxæmia. This pyelogram was taken one and a half hours after the injection of uroselectan, as it was only then that a satisfactory picture of the left urinary tract could be obtained. The kidney function on the right side was so poor that no shadow was obtained, even after this long interval.

Where the urinary tract is completely atonic, pain is absent although infection may be so severe that there is almost complete interruption of kidney function. Cases have been encountered where, although the pain and tenderness were present only on the left side, the condition on that side was much less severe than on the right, where solid pus was evacuated from the kidney pelvis.

A careful history usually elicits the fact that earlier in the illness pain and tenderness were present on the right side also. Presumably the pain has disappeared as the tone of the urinary tract has been destroyed, for the pus lodging in the urinary tract aggravates the existing atony and if it is not evacuated by some means or other, the tract quickly becomes quite atonic. Infection can exist where there is very little stasis, as often happens on the left side. The greater degree of stasis on the right side explains why, although the infection is usually bilateral, it is more severe on that side.

The condition is probably a pyelonephritis in those cases where the toxæmia is profound, with sickness, jaundice, and prostration the prominent features, as at post-mortem examination abscesses have been found in the kidney substance of patients who had a history of this type. How far the kidney substance is involved in the less severe cases is difficult to say, but there is certainly marked interference with kidney function. Where the infection is confined to the right side, the concentration of urea on that side is always

FIGS. 7 8 9

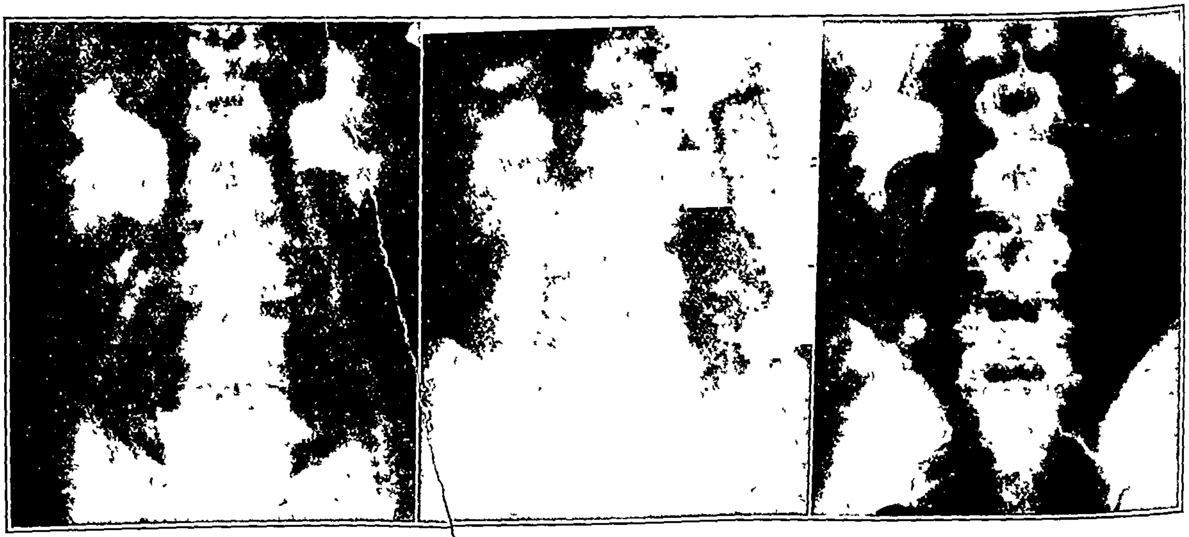

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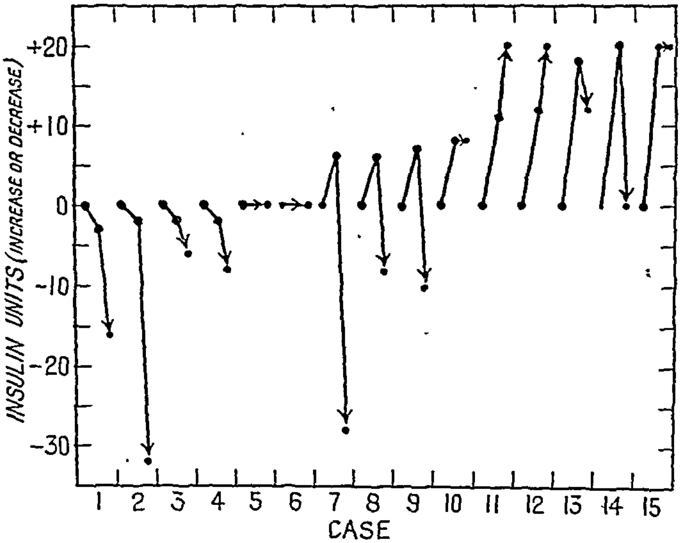
TABLE I

Age in 1923.	Carbohydrate in grammes.			Units of insulin.					Increase or decrease in insulin dosage between December, 1929 and—	
	December.									
	1929	1930	1931	1927	1928	1929	1930	1931	Jan., 1931.	Jan., 1932.
31	43	100	113	44	42	38	35	22	− 3	−16
36	43	100	100	68	60	82	80	50	− 2	−32
34	50	80	100	12	20	40	38	34	− 2	− 6
59	50	93	108	33	28	16	14	8	− 2	− 8
54	41	100	110	46	42	42	42	42	+ 0	+ 0
62	36	78	93	28	28	30	30	30	+ 0	+ 0
32	40	100	125	—	—	76	82	48	+ 6	−28
43	36	70	100	13	13	14	20	6	+ 6	− 8
28	45	100	120	40	28	40	47	30	+ 7	−10
47	40	75	100	24	24	22	30	30	+ 8	+ 8
39	45	100	100	20	28	32	43	52	+11	−20
27	50	80	130	20	0	12	24	32	+12	+20
29	36	100	100	36	42	60	78	72	+18	+12
14	46	100	130	42	50	60	80	60	+20	+ 0
17	40	80	120	36	36	44	64	64	+20	+20



This Figure indicates the change in the number of units of insulin needed for each of the cases mentioned in Table I. in December, 1930 and 1931, showing the increase or decrease following initiation of a higher carbohydrate diet in December, 1929.

An attempt was made in this series to discover whether the severe or the mild cases improved most. The severity of the disease was measured by the C/I ratio, described by one of us (H. E. W. R.).[12] The total amount of carbohydrate in the diet, together with 60 per cent. of the protein and 10 per cent. of the fat was added together, and the sum divided by the units of insulin—e.g., a diet consisting of C. 100, P. 70, F. 100 has a total carbohydrate value of $100+42+10=152$. If the insulin dosage was 50 units, the C/I ratio would be $152/50=3{\cdot}04$.

One defect of this method is the difficulty of ascertaining in out-patients whether the dose of insulin is adequate. If the insulin dosage is inadequate to keep the urine sugar-free, the C/I ratio will convey the impression that the diabetic condition is less severe than *it actually* is. The blood-sugar in our cases is estimated every 4 to 12 weeks, between the hours of 10.30 and 12 noon, after the usual breakfast and insulin. The dose of insulin is assumed they are all patients who did not respond to the routine treatment. Eleven cases showed *partial improvement*. Of these, seven were improving in any case and the process was only accelerated by the drainage. Two were very ill and the improvement was not considered sufficiently dramatic to allow of delay in terminating the pregnancy. Two went into labour within a few hours of the insertion of the catheter. In four cases there was *no improvement*. In two of these it was probably due to abscess formation in the kidney before treatment was adopted. Both died and in one this was substantiated at post-mortem examination. Permission for post-mortem examination was refused in the other case. Two were definitely worse after catheterisation, but as these were among the first cases to be treated by me by this method, the failure may have been due to faulty technique.

FIG. 13

The two patients who went into labour following catheterisation were both in the last month of pregnancy, at which stage of pregnancy I have found that distension of the renal pelvis sufficient to cause colic is associated with the onset of uterine contractions. Similarly, in acute pyelitis, renal colic may be so severe as to initiate uterine contractions and cause a miscarriage even as early as the sixth month. If the renal colic in such a case is relieved by the passage of a ureteral catheter, the uterine contractions subside.

Termination of the pregnancy, either induced or spontaneous, is followed by a rapid improvement. As the passage of a catheter to a point above the pelvic brim has the same effect, the cause of the improvement in both instances is probably the relief of the compression of the ureter at the pelvic brim. The beneficial effect of the catheter remains after its withdrawal as the relief of tension probably enables the ureter to regain its tone and the increased intake of fluid made possible by the improved general condition of the patient stimulates ureteral peristalsis.

Summary

(1) Pregnant women show varying degrees of atony of the upper urinary tract. In some this is very slight so that no appreciable stasis is produced. In others it is very marked and can be shown to occur at the very beginning of pregnancy. (2) In the second half of pregnancy, dilatation and stasis frequently result and are due to pressure of the uterus on the atonic ureters at the pelvic brim. (3) Dilatation and stasis from the pelvic brim upwards can be produced in the non-pregnant by ovarian cysts. In these the dilatation is less and there is an absence of the marked elongation and kinking of the ureter which is characteristic of pregnancy, even although the pressure exerted by the cyst may be greater than could possibly be exerted by the pregnant uterus. The atony peculiar to pregnancy is therefore the primary factor. (4) In normal pregnancy the tone of the ureters has been shown to improve near term, and in cases of albuminuric toxæmia there is a minimum of atony and stasis. In both instances there is believed to be an excess of posterior pituitary hormone in the blood. The primary factor in the production of the changes in the upper urinary tract in pregnancy is probably, therefore, a disturbance of the endocrines. (5) Infection of the urinary tract is common during pregnancy and is often unrecognised. (6) Infection is always preceded by stasis and seldom clears up completely until the stasis is relieved by termination of the pregnancy. (7) Early diagnosis is most important, as if instituted early, simple treatment by abundant fluids and alkalis is sufficient to enable the patient to go to term. (8) Ureteral catheterisation has a definite place in the treatment of serious cases for the relief of pain and the promotion of drainage.

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THE HIGH CARBOHYDRATE DIET IN THE TREATMENT OF DIABETES MELLITUS

By GEORGE GRAHAM, M.D. CAMB., F.R.C.P. LOND.
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AN important change has taken place in the last few years in the dietetic treatment of diabetes mellitus. Before the discovery of insulin the diet for a severe case was an extremely restricted one. The carbohydrate ration was very small (30–50 g.); the protein ration was about the same as at present (70 g.); the fat ration was often very large (150–200 g.). Even larger amounts of fat (200–250 g.), with small amounts of protein (20–50 g.) and of carbohydrate (30–40 g.), were advocated by Petren,[1] and Newburgh and Marsh.[2] The diet used by one of us (G. G.)[3] was approximately C. 42 g., P. 65 g., F. 123 g., Cals. 1581.

In 1923, when insulin was still very expensive—25*s*. for 100 units—the diet was at first little altered. The insulin improved the health of the patients to such an extent that there was a tendency to maintain the diet at the same level, even after the cost of insulin had been much reduced. Some workers began to increase the carbohydrate slightly, and in 1926 Sansum, Blatherwick, and Bowden,[5] and in 1929 Geyelin and Mackie,[4] published papers showing that much better results could be obtained if the carbohydrate was very considerably increased and the fat decreased. In 1930 Rabinowitch[6 7] advocated a diet which contained C. 250 g., P. 70 g., F. 50 g., Cals. 1577. Adlersberg [8] has used a similar diet, but he sometimes gave a high protein ration in addition.

In this country, at a meeting of the Royal Society of Medicine (Section of Therapeutics and Pharmacology) in 1931,[9] Poulton, Hunt, Lawrence, Nixon, Thompson, Graham, Cammidge, and Weiss all agreed that patients did better with an increased carbohydrate ration, and Nixon, Graham, and Cammidge laid stress on the importance of reducing the amount of fat in the diet. Recently Nixon [10] and Dyke [11] have published papers on the same subject. Very different diets are being used, apparently with excellent results, the only common factor being the high carbohydrate.

At the meeting referred to above, one of us (G. G.) gave the results of observation on 15 "pedigree" patients, who had all been in St. Bartholomew's Hospital before the end of 1924. They had, with one exception, attended the "follow-up" department regularly monthly or three-monthly, and had adhered fairly closely to the authorised diet of about C. 40–50 g., P. 70 g., F. 125–150 g., Cals. 1613–1846. They were examined again before December, 1929; during the six years since their discharge from hospital they had kept well and were earning their living, although a definite increase in the insulin requirements had occurred. In January, 1930, the amount of fat was reduced to about 100 g. and the carbohydrate was gradually increased by 10 or 15 g. to 100 g., the protein being left unchanged at about 70 g. The insulin dosage was at first increased in the proportion of 1 unit of insulin to 2 g. of carbohydrate, but as definite signs of overdose often occurred the later increases were made in the proportion of 1 unit to 4 g. of carbohydrate. A year after the increase in the carbohydrate was begun, four out of the 15 patients needed 2 or 3 units less, in spite of the increase of 40 to 60 g. in the carbohydrate ration; two required the same amount of insulin; four required 6 or 8 more units; two required 11 and 12, while three required 18 and 20 more units. During the year 1931 the carbohydrate was increased by a further 10 to 40 g., except in three cases where it was kept unchanged. At the end of 1931 all the four patients who had reduced their insulin in the first year had made further decreases in the insulin; and three others were also taking less insulin than in 1929. The actual decreases varied from 6 to 32 units (Table I., see Figure). The two patients who had not altered their dose in 1930 were still taking the same amount of insulin, although the carbohydrate had been increased by 10 and 15 g. One patient, a boy of 19, had reduced his insulin by 20 units, and was therefore taking the same amount of insulin as in 1929, although the carbohydrate consumed was 84 g. more; two other patients had made no change, and two patients had increased their insulin by 8 and 9 units respectively. The results were so striking that another 40 patients, whose diets are fairly accurately known, have been examined. The carbohydrate had been increased by 46 to 99 g., and varied between 100 and 145 g. This batch of patients has now been under observation between eight and 28 months; 14 take less insulin than before the increase of carbohydrate; two take the same amount of insulin; seven take 2 to 8 more units; ten take 10 to 19 more units; and seven take 20 to 30 more units (Table II.). Many of these patients seem to be still improving.

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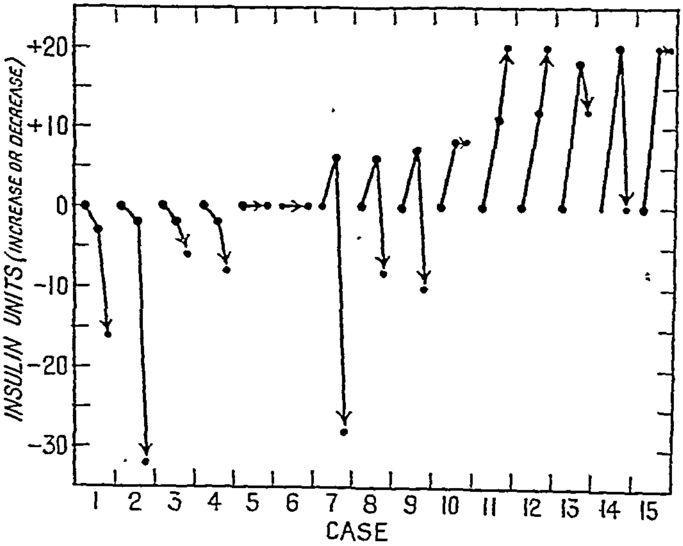

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An attempt was made in this series to discover whether the severe or the mild cases improved most. The severity of the disease was measured by the C/I ratio, described by one of us (H. E. W. R.).[12] The total amount of carbohydrate in the diet, together with 60 per cent. of the protein and 10 per cent. of the fat was added together, and the sum divided by the units of insulin—e.g., a diet consisting of C. 100, P. 70, F. 100 has a total carbohydrate value of 100+42+10=152. If the insulin dosage was 50 units, the C/I ratio would be 152/50=3·04.

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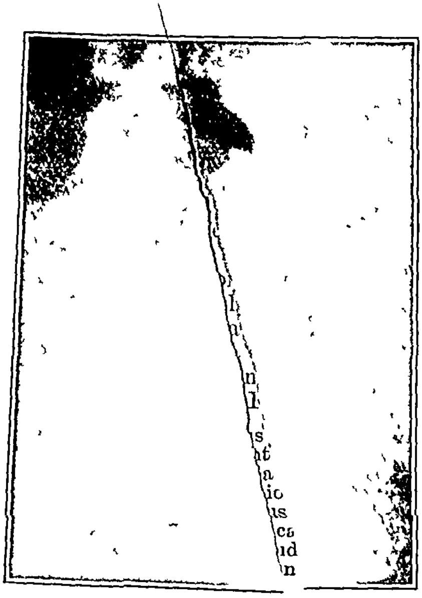

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Summary

(1) Pregnant women show varying degrees of atony of the upper urinary tract. In some this is very slight so that no appreciable stasis is produced. In others it is very marked and can be shown to occur at the very beginning of pregnancy. (2) In the second half of pregnancy, dilatation and stasis frequently result and are due to pressure of the uterus on the atonic ureters at the pelvic brim. (3) Dilatation and stasis from the pelvic brim upwards can be produced in the non-pregnant by ovarian cysts.

of the marked elongation and kinking of the uret which is characteristic of pregnancy, even although the pressure exerted by the cyst may be greater than could possibly be exerted by the pregnant uterus. The atony peculiar to pregnancy is therefore the primary factor. (4) In normal pregnancy the tone of the ureters has been shown to improve nea term, and in cases of albuminuric toxæmia there is minimum of atony and stasis. In both instance there is believed to be an excess of posterior pituitar hormone in the blood. The primary factor in th production of the changes in the upper urinary trac in pregnancy is probably, therefore, a disturbance the endocrines. (5) Infection of the urinary tract common during pregnancy and is often unrecognised (6) Infection is always preceded by stasis and seldo clears up completely until the stasis is relieved termination of the pregnancy. (7) Early diagnosis most important, as if instituted early, simple trea ment by abundant fluids and alkalis is sufficient enable the patient to go to term. (8) Ureter catheterisation has a definite place in the treatment serious cases for the relief of pain and the promoti of drainage.

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SYMPATHETIC CONTROL OF TISSUE CHANGE

AND ITS SURGICAL SIGNIFICANCE

BY R. CUNLIFFE SHAW, F.R.C.S. ENG.

HON. ASSISTANT SURGEON, PRESTON AND COUNTY OF LANCASTER ROYAL INFIRMARY

IT has been proved in many clinics that the ablation of the sympathetic nerve-supply to tissues that show pathological change results in a restoration of cell balance. It is my object to give the salient facts, derived from experimental inquiry, which help towards the elucidation of the nature of the relationship between the sympathetic nerve apparatus and the tissue cell, and to indicate the manner in which surgery acts in the restitution of the tissue change.

It is conceivable that those conditions for which surgery offers a beneficial line of treatment are due to one or other or both of the following disturbances :—

(*a*) Over-stimulation of the vasoconstrictor fibres might produce prolonged vascular spasm, causing impoverishment of the nutrient supply to the tissue cells, which undergo degenerative changes.

(*b*) Stimulation of the sympathetic fibres might directly produce abnormal metabolic changes resulting in pathological sequence.

In 1924 I showed[1] that stimulation of certain mixed nerves results in the variation of the threshold values for pressure pain ; later it was found that these changes were independent of the associated vascular response, and moreover they were prolonged by arresting the circulation, showing that the alteration of sensory perception was due to the accumulation of metabolites in the tissues, the direct result of physiochemical change produced by the nerve stimulus. Then followed the discovery of a comparable alteration in the pressure pain threshold after peri-arterial sympathectomy and ganglionectomy. Moreover, it was found that stimulation of the peri-arterial plexus during novocain block of the surrounding tissues resulted in a similar sensory phase.

The observation of Auguste Tournay[2] on the lowering of the threshold of sensory perception in the hind limb of dogs by sympathectomy, was demonstrated by the return of the nociceptive reflexes after their disappearance following division of the sciatic nerves. These results suggested confirmatory evidence, and, furthermore, it is to be recalled that Claude Bernard noted augmented sensitivity in animals after ganglionectomy. The work of Orbeli[3] has shown that sympathetic stimulation causes an increased muscle tissue and delays the onset of fatigue phenomena. He epitomised his conclusions in the statement that the sympathetic system exerts a profound influence over the physio-chemical changes of skeletal muscle and its functional ability. Maibach,[4] in 1928, confirmed the foregoing observations, and found that sympathetic stimulation delayed muscle fatigue in bloodless preparations, eliminating the possibility of the results being due to vasomotor response.

FIRST CONCLUSIONS

The results of the foregoing work may be conveniently stated as follows. Firstly, stimulation of the sympathetic system results in—

(1) Exaltation or depression of the sensory thresholds (for pressure pain in particular).

(*a*) This variable threshold potential is associated with vasomotor change, and it has been found that the diphasic mechanism might play an important part in the adjustment of the animal organism to external stimuli.

(*b*) The threshold changes were shown to be associated with the accumulation of metabolites in the tissue spaces, which prolong the new threshold phase.

(*c*) The threshold changes were shown to be independent of the vascular response.

(2) Increase of the motor response of muscle tissue during the onset of the fatigue phase. The sympathetic exerts a profound influence on the physiochemical changes in muscle tissue, modifying its functional ability ; this change is associated with—

(*a*) Increased consumption of oxygen by the muscle tissue.

(*b*) It is independent of vasomotor control.

In the second place it was shown that ablation of the sympathetic supply results in—

(1) The assumption of the minimum sensory threshold phase and the associated vasodilatation. In this state further electrical stimulation does not appear to produce any change in the new threshold value.

(2) Tournay has demonstrated that sympathectomy exalts the residual somatic sensation in a limb that has been deprived of its principle somatic innervations by division of the sciatic nerve. This hypersensitivity is shown by the return of the nociceptive reflexes.

FURTHER OBSERVATIONS

The next stage in the inquiry was a study of the effects of the irritation or ablation of the sympathetic pathway to a selected area of distribution ; for this purpose a series of experiments were carried out in which the sympathetic nerve-supply to the thyroid gland was either severed above the ganglion stellatum or subjected to chronic fibrotic irritation by surrounding the cervical sympathetic chain with slowly cicatrising autogenous muscle grafts. As a result of this work it was found that lesions developed in the thyroid gland and the superior cervical ganglion, those in the gland were initially of the nature of a cell hyperplasia followed secondarily by cell degeneration. In the ganglia there was a proliferation of the connective tissue and degeneration of the ganglion cells. It was observed that although these changes occurred both after nerve section and nerve irritation, they were more advanced in the irritative experiments, where masses of rapidly proliferating thyroid parenchyma entirely obliterated the normal acinic structure. A somewhat similar pathological change was observed to follow electrical stimulation of the cervical sympathetic in goats, as shown by the work of Wilson.[5] The conclusion was that removal of a normal sympathetic central control of the superior cervical ganglion resulted in nerve-cell changes in that ganglion, which in turn removed the restraint on cell growth and permitted hyperplasia, and, furthermore, that in those cases where an irritant element was to be adequate if the blood-sugar is below 130 mg. per cent. at this time of the day. No case has been included which did not fulfil these conditions. If the C/I ratio is below 2, the diabetic condition is very severe; 10 of our cases had a ratio between 1·2 and 1·8, and 11 between 2·2 and 3·9.

TABLE II

Case.	Age at onset of illness.	Grammes of carbohydrate in diet.			Time in months since change of diet.	Units of insulin required with			Increase or decrease since change of diet.	C/I ratio.
		Low.	High.	Inc.		Low carb. diet.	High carb. diet.			
							M.	P.		
16	30	40	130	+90	12	70	76	48	−22	1·4
17	22	40	125	+85	12	74	88	52	−22	1·4
18	2	40	135	+95	28	30	50	16	−14	3·0
19	8	40	100	+60	12	64	72	50	−14	2·6
20	50	45	100	+55	12	10	10	0	−10	10·0
21	6	67	120	+53	22	45	56	36	− 9	4·0
22	43	47	120	+73	20	40	44	32	− 8	3·5
23	33	45	135	+80	28	80	82	74	− 6	1·2
24	40	40	112	+72	28	54	74	48	− 6	1·8
25	47	40	100	+60	24	22	28	16	− 6	5·0
26	21	35	100	+65	16	84	98	80	− 4	1·5
27	38	45	120	+75	15	10	14	8	− 2	10·0
28	49	45	100	+55	26	16	24	14	− 2	7·0
29	39	44	100	+56	20	34	42	32	− 2	3·0
30	59	45	100	+55	26	60	66	60	+ 0	1·7
31	43	45	100	+55	22	40	50	40	+ 0	2·6
32	35	45	100	+55	13	40	62	42	+ 2	1·6
33	18	40	120	+80	18	70	84	76	+ 6	1·5
34	69	40	100	+60	22	22	34	28	+ 6	4·5
35	46	45	100	+55	24	22	42	28	+ 6	5·0
36	28	47	100	+53	15	36	56	44	+ 8	2·8
37	18	46	145	+99	30	70	86	78	+ 8	1·4
38	50	45	95	+40	15	14	22	22	+ 8	12·0
39	21	48	125	+77	22	30	40	40	+10	8·0
40	26	67	110	+43	20	32	44	44	+12	6·0
41	30	45	100	+55	20	16	36	28	+12	6·0
42	34	54	100	+46	12	40	52	52	+12	2·7
43	54	44	120	+76	12	26	40	40	+14	7·0
44	59	40	100	+60	28	8	22	22	+16	18·0
45	28	45	100	+55	17	75	96	92	+17	1·7
46	42	40	120	+80	18	44	62	62	+18	2·4
47	51	40	120	+80	28	28	58	46	+18	4·0
48	37	50	120	+70	16	13	32	32	+19	7·0
49	18	45	100	+55	8	10	30	30	+20	10·0
50	6	53	130	+77	28	18	48	38	+20	4·0
51	23	55	110	+55	24	24	48	48	+20	4·5
52	55	45	100	+55	18	10	44	30	+20	10·0
53	48	53	130	+77	28	20	42	42	+22	2·7
54	13	50	130	+80	28	40	146	66	+26	2·5
55	53	41	100	+59	28	18	60	50	+32	2·4

Inc. =increase; carb. =carbohydrate; M. =maximum; P. =present.

Table III. shows that while improvement may take place in every group, the more severe cases are a little more likely to show a striking improvement.

TABLE III.—*C/I Ratio*

C/I ratio.	Cases	Insulin.		
		Unchanged or decreased.	Small increase (0–12 units).	Large increase (12–24 units).
Between 10 and 18 ..	6	2	1	3
,, 6 and 9 ..	6	1	1	4
,, 4 and 5·9 ..	7	2	2	3
,, 2 and 3·9 ..	11	5	1	5
,, 1·2 and 1·9 ..	10	5	4	1
Total cases ..	40	15	9	16

DISCUSSION

The explanation of the improvement in the diabetic condition is not easy. Rabinowitch suggested in 1930 that the improvement was due to the decrease in the caloric value of the diet, as a result of the decrease in the fat; but as the outcome of further experiences in 1931 he found that the same improvement might take place, although the caloric value of the diet was kept constant. Adlersberg, who uses different diets, according to the severity of the disease, was also inclined to ascribe the improvement to the lower caloric value. Our experience shows that the improvement cannot be due to a decrease in the caloric value, because it was slightly increased by the substitution of 60 to 80 g. of carbohydrate for 25 g. of fat. It seems more probable that the improvement is due to the alteration in the balance of the carbohydrate and fat. With a low carbohydrate diet, although the breath of the patients did not smell of acetone, the urine usually gave a definite reaction for aceto-acetic acid with Rothera's reagent; under the new régime it never gives any reaction.

This observation suggests that the presence of aceto-acetic acid or beta-oxybutyric acid in the blood may cause the increased demand for insulin, just as, for instance, the presence of a staphylococcal infection causes a great increase in the insulin demands. It is possible that some other intermediate product of metabolism, besides the acetone bodies, may be responsible for the change. This hypothesis is supported by the observations of Bainbridge,[13] on the diets given to the rats and mice used for testing the strength of insulin. She found that a diet containing much fat but no carbohydrate rendered the animals less sensitive to insulin than they were when having a mixed diet. She also thought that a diet of the same caloric value, containing no fat but much carbohydrate, rendered animals slightly more sensitive to insulin.

The fact that an improvement occurs, even though the fat ration is 100 g., is of great importance to the patients who have had diabetes for many years. They have got accustomed to a high fat ration, and when the bacon is reduced to 1 oz. a day, and the butter to 1 oz., they usually feel the privation. To reduce the fat to 50 g. makes the diet almost as intolerable for many patients as is the old diet of 40 g. of carbohydrate. Partly for this reason, and partly because the patients are doing so well, we are loth to recommend, for regular use, a diet of less than 100 g. of fat, but it should be reduced below 100 g. if acetone bodies are present in the urine at any time of the day. Children should be given a lower fat diet, because they form acetone bodies much more easily than adults.

Another possible explanation for the decrease in the insulin dosage is the actual improvement in the beta cells of the islands of Langerhans. So far there is no evidence available on this point.

It is difficult to conduct these experiments, which have to be done without adequate controls, and the search for the most suitable diet must be continued for many years. Some of the 15 "pedigree" patients are still improving, and require less insulin than they did in January, 1932. If in January, 1933, the fat in the diet is reduced by 20 g., and the carbohydrate increased by 45 g., it may be difficult to say whether any subsequent improvement is due to this last alteration in the diet, or would have taken place independently. Another difficulty is the occurrence of secondary infections, which may increase the insulin requirements. These do not seem to have disturbed the 15 "pedigree" patients in the last two years, and their general condition is certainly much better than it used to be.

The task of supervising the change in the diets has been made possible by the assistance of the hospital dietitian, Miss Abrahams, and our thanks are due to Miss Ball, who

The first two clinical entities that fall into this category are radio-dermatitis and leucoplakic vulvitis; in both cases there is an early stage of vascular dilatation associated with a hyperplasia of fibrous and elastic tissue cells, concurrently there is a proliferation of certain layers of the epithelial cells. In the later stages there are retrogressive changes in the connective tissues resulting in the development of hyaline areas and excessive fibrosis, whilst the epidermal layers undergo desquamation. Lastly, there develops a condition of cell imbalance in which the epithelial cells develop on dysgenetic lines and ultimately may invade the connective tissues at focal points. In both these conditions, surgical intervention upon the sympathetic system has resulted in complete cure or considerable improvement. In a series of 27 cases where the peri-arterial operation had been performed for radio-dermatitis, there were 12 complete cures and 7 considerably improved; these results were obtained from various continental clinics, and, moreover, the peri-arterial operation only was performed. Again, Leriche[9] completely cured a case of leucoplakic vulvitis that had advanced as far as the kraurotic stage by hypogastric sympathectomy.

It was therefore evident that ablation of the sympathetic innervation in either of these conditions causes (*a*) a cessation of the abnormal proliferative activity of epithelial and connective tissue cells; (*b*) an absorption of the excess of abnormal tissue; (*c*) permits the regeneration of normal tissue elements.

It follows that the sympathetic nervous system must be intimately concerned in the production of the earlier stages of these lesions, and that removal of the dyscontrol before the onset of epithelial invasion will restore cell balance. A comparison between these conditions and the sequence of pathological changes that precede the development of coal-tar cancer of the skin and carcinoma of the breast, as described by Sir Lenthal Cheatle, suggests that a similar mechanism is involved in the initial stages. In both these conditions there is early hyperplasia of elastic and fibrous tissues, together with an epithelial proliferation. In this association some very suggestive work has been accomplished by Rémond, Bernardberg, and Sendrail[10]; they found that the production of tar cancer in rabbits was more rapid in its development and precocious in its onset in an area of skin that had been deprived of its sympathetic supply. These results are also comparable to those obtained by Dobrzaniecki[11] and Magliulo,[12] who found that grafts of all types are more successful when applied over areas that have been deprived of their sympathetic innervation. Moreover, the first-named observed that wounds healed more readily after sympathectomy, and he concluded that the regeneration of epithelium, connective tissue, bone, and muscle, is accelerated by extirpation of the sympathetic control.

These facts harmonise with the view that the normal function of the sympathetic system is to act as a brake over cell growth, and that removal of the normal influence or its replacement by irritation produces physio-chemical changes that determine irregular cell hyperplasia.[11] Willy Meyer[13] has suggested that in cases of malignant disease there is a parasympathetic hypertonus which is associated with a definite alkalosis and the predominance of potassium ions. It is known that section of the splanchnic nerves causes a fall in the blood calcium, and therefore a deficiency of calcium ions or an excess of potassium ions would mean a deficiency of the sympathetic nervous influence; in other words, it would imply a loss of normal sympathetic control of the tissue cells. In this connexion it is interesting to observe that Fontaine and Jung,[14] studying the effects of wound healing after the removal of the superior cervical ganglion, have found that healing was more rapid on the sympathectomised side, and that the hydrogen-ion concentration of the exudate was found to vary very slightly from the alkaline to the acid side on the operated side, but that on the unoperated side the reaction was always distinctly acid.

CONCLUSIONS

1. That the sympathetic nerve control of the tissue cells is normally of the nature of a brake, preventing irregular and uneconomic proliferation. In this respect its activity may be compared to its inhibitory influence upon the sensory threshold, and the production of the brake phenomenon in muscle tissue.
2. That certain non-specific irritants act on the autonomic nerve mechanism, associated with the dermis and epidermis, and produce a definite sequence of pathological change characterised primarily by hyperplasia of fibrous elastic and epithelial tissue cells.
3. It is suggested that the derangement of the sympathetic-hormonic apparatus determines the initial development of neoplasms.
4. The surgical removal of the sympathetic nerve-supply acts essentially through extirpation of those factors that disturb the physio-chemical balance of the tissue cells, and that the passive effects of vasodilatation are of a secondary importance.

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ACTUATION OF THE INERT DIAPHRAGM

BY A GRAVITY METHOD

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FORMERLY I regarded the breathing thorax as a *concertina-bellows*; my present work suggests that it resembles rather a cylinder and piston. In older men the cylinder wall is often rigid and is scarcely used in respiration at rest. Hence in artificial respiration it seems much better to exploit the piston action of the diaphragm rather than to try to compress the rigid walls of the cylinder—leaving the piston flapping passively up or down and thus frustrating much of one's efforts to squeeze air in and out of the trachea.

The efficacy of the following method—simple but apparently novel—is illustrated by my first two cases: (1) post-diphtheritic paralysis of the diaphragm (successful); (2) Landry's paralysis, dying of failure of the heart, not of respiration.

Essentially the method consists of laying the patient on a stretcher, which is pivoted about its superadded there was a more profound degree of cell hyperplasia.

In another series of experiments[6] the sympathetic supply to an area of the arch of the aorta was subjected to chronic irritation and division, and at graded intervals after operation the animals were examined for evidence of pathological change. Allowing for intercurrent arterio-sclerosis, and taking into consideration the control animals, it was proved that a series of pathological changes occurred in the aorta of those animals that were irritated, whereas no results followed simple division of the sympathetic fibres at a distance from their distribution. In those cases where there were positive results the earliest change consisted in the proliferation of the connective tissue cells in the *intima, followed by a hyperplasia of the elastic tissue.* Here again it is to be strongly emphasised that the first result of sympathetic irritation on the tissue cells is one of increased and irregular growth, and similar to the previous experiments the proliferated tissue underwent a progressive sequence of degenerative changes, followed in the most advanced cases by calcification and the formation of atheromatous abscesses.

From the foregoing group of experiments it was concluded that irritation of the sympathetic supply produced a condition of cell imbalance allowing irregular hyperplasia, and therefore it suggested that the normal control was one of restraint towards cell growth. It is interesting to compare this conception of sympathetic function with the similar type of control which it has been shown is exercised over the sensory threshold, and, furthermore, it will be remembered that the brake phenomenon of Reiger in muscle tissue has been shown to be *dependent on the* sympathetic innervation.

The next question that arose involved the nature of the elemental disturbances which produced the tissue cell change observed in the foregoing experiments. As the result of a study of the conditions, the following factors give a definite balance in favour of the cell changes being due to direct interference with the metabolism of the tissue cells, relegating the part played by vasospasticity to a secondary position. These considerations are as follows:—

(1) *It was found that division of the cervical sympathetic* above the stellate ganglion caused cell hyperplasia in the superior pole of the thyroid gland; since the entire vaso-*constrictor pathway to this portion of the gland* had been severed, it follows that the hyperplastic changes in the thyroid must have been independent of vasopressor reactions.

(2) From a study of the effects of peri-arterial sympathectomy upon dermo-epidermal lesions, it has been proved in many surgical clinics that no inconsiderable percentage of cases are definitely improved or cured as the result of this procedure. It therefore follows that if we are to presume that the success of the operation is dependent upon the removal of a vasoconstrictor element, or conversely, that the ulcers persist on account of vascular spasm, one is faced with the difficulty of an uninterrupted vasoconstrictor supply through the principal mixed nerves of the limb, and it is incredible that the mere proximal interruption of the peri-arterial plexus could nullify the constrictor element if this were the *predominative factor.* In my experience the thermal effects of a peri-arterial operation are quite insignificant, and yet, despite this poor response, I have found *in my own small series of* cases there has been a definite progress from the date of operation up to a complete cure. It is interesting to note that Lewis has suggested *that* in some cases such operations as peri-arterial sympathectomy may produce beneficial results by the effects of trauma, bandaging, &c. In a case of bilateral ulceration on the legs I studied in detail the effect of the periarterial operation, and found that no change whatever occurred in the ulcers before sympathectomy, despite bandaging, dressings, &c., and yet these ulcers progressively healed, although the thermal response was also negligible after the first week.

(3) Polettini and Josué[7] produced intravascular tissue *hyperplasia by the fractional* dosage of animals with adrenaline over long periods. In a similar series of experiments I found that only one out of four animals *developed lesions. This observation* serves as a corollary to the experiments where irritation was found to produce aortic change. If adrenaline produced its action through the *induction of* vasomotor spasm, pathological change might be expected in all these cases.

(4) It will be recalled that the changes in the pressure *pain threshold* were produced during the stoppage of the circulation, and that the recovery period was considerably protracted owing to the accumulation of metabolites in the *tissue spaces. This suggests a comparison* with the cutaneous phenomena ascribed by Lewis to the antidromic reflexes through the sensory nerves and their vascular colateral. *He concluded that such impulses influenced* metabolism in the cells of the skin, releasing in the tissue spaces a vasodilator substance, especially in the epidermis, which is *plentifully and intimately supplied by nerve-*fibres belonging to the sensory nervous system. It might be added that the skin is equally well supplied with fibres [illegible] c system. In this association [illegible] Lewis has drawn a comparison [illegible] nknown vasodilator substance in the skin; and, further, the *proliferative* reactions following the injection of histamine into the muscle coat of the stomach of cats, as studied by O'Shaughnessy,[8] advances this hypothesis. The close chemical affinity between histamine and *adrenaline will be recalled in this association; these facts* suggest that certain of the hyperplastic reactions may result from stimulation of the tissue cells and the liberation of histamine or an allied substance, exciting hyperplastic conditions.

(5) It is to be noted that the researches of Y. Manouélian (1913) revealed that in many cases where arterio-sclerotic changes had advanced to a profound degree there were still perfectly normal vasa vasorum containing normal blood corpuscles in the wall of the diseased vessel. It would seem reasonable to suppose that if the changes in the main vessel were due to vascular spasm, then the minute nutrient vessels would be first affected, and become obliterated long before the gross changes in the intima of the main vessel. The contrary being the case suggests that the lesions were *due to alteration* of the cell metabolism through abnormal impulses descending to the terminals of the vascular innervation.

(6) The researches of Orbeli and his collaborators indicate that in muscle tissue there is a direct physio-chemical control through the autonomic apparatus.

The foregoing deductions show that in these conditions of tissue change, produced experimentally, the essential element that is disturbed is the control of the physio-chemical changes in the actual tissue cell, *irrespective of the vasomotor responses.* A study of certain clinical conditions was carried out with a view to obtaining similar evidence, and these observations may be briefly stated to present a complete sequence of evidence.

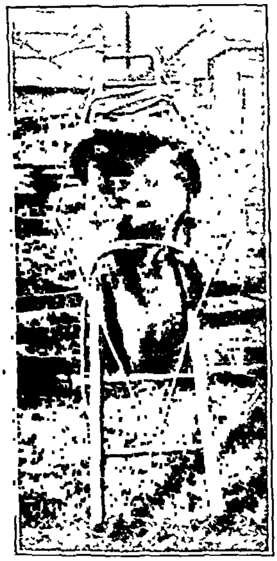
CELL GROWTH AND TISSUE CHANGE

The subject appeared to be intimately associated with the factors controlling cell growth, and suggested as a basis that the stimulus for tissue hyperplasia and its normal inhibition might in some way be partially associated with the autonomic system. The important metabolic changes that are normally affected through the influence of sympathetic nerve stimuli are well recognised, and the intimate coöperation between the autonomic system and the hormonic *secretions* indicate a mechanism for the direct control of physio-chemical change in the tissues, and it is conceivable that this apparatus once disorganised might lead to the most profound cell imbalance. There are certain clinical conditions associated with the *integument* which show a progressive sequence of tissue change, and, if left to develop, culminate in the gross hyperplasia of a dysgenetic type of epithelial cell that may invade the connective tissues and produce metastases. These conditions are further characterised by uniform type of primary pathological process, suggesting a definite tissue response to a non-specific stimulus through the same mechanism.

work for one man, who need not be skilled. This is very different to the skill and exhaustion demanded by the ordinary methods.

Dr. Cooper reported that after 8 P.M. his cyanosis and respiratory difficulty increased. Oxygen alone gave no relief. Although the rocking perhaps accentuated his distress, yet he had to have it every alternate ten minutes, because it promptly relieved the cyanosis, which returned when the apparatus was stopped. In short, "the apparatus did what it was asked to do." On August 9th at 10 A.M. Dr. Muir and I saw him together. He had then been seven hours in coma and his ribs and sternomastoids were paralysed. But a most encouraging feature was that the diaphragm was contracting regularly, though rather spasmodically, at 24 to the minute. However, at 12.30 the heart, which had so far been beating with unnatural strength, rapidly failed and he died at 12.45. This was very disappointing because the stage of respiratory failure (often brief) had apparently been tided over; and if the bulbar cardiac centres had not failed, complete recovery in three months was quite possible.

FIG. 3



Extemporised apparatus for prolonged artificial respiration, consisting of a 6-foot ladder on a low fence. The diamond lashing of the cord prevents the ladder sliding or getting oblique on the fence. Coats or blankets, hot bottles, and a rope to strap the buttocks should be added. Schafer's method is used till the apparatus is rigged up.

ADDENDA

(1) *Four skiagrams* (by Dr. Bannen).—These can be described verbally to save illustrations. The first pair shows the baby (Case 1) in the rocking-chair in the head-up and the head-down positions. The diaphragm is seen to have moved from the ninth to the tenth rib—a considerable change of air content. The other pair shows that my diaphragm was displaced 5 cm. when I was rocked on the apparatus through 50° each way. Voluntary respiratory movement was negligible. My chest measurement is 84 cm. Treating it as a cylinder and piston this excursion indicates roughly 1800 c.cm. of air. The shadow of the heart and large vessels is greatly changed in shape but not in area.

(2) *Measurement of air expired* on the rocking stretcher. This amounted to 1500 c.cm. in my son, aged 18 (chest 29 in., height 69 in.), without voluntary respiration. Schafer's method produced only 1000 c.cm. both in him and myself (chest 33 in., height 60 in.). In my son, seven up and down rockings per minute were ample for comfort without voluntary respiration. This would give more than the 6000 c.cm. of air which are said to be needed per minute. Ordinary tidal air is given as 500 c.cm. The method of measurement I used seemed reliable though rough.

If the method is to be tried for respiratory failure in spinal anæsthesia by the heavier fluids, I suggest that the rockings need be only five or six per minute, of which eight to ten seconds should be in the feet-down position and only two seconds in the head-down posture. Thus gravity should help to keep the heavy fluid away from the medulla. Presumably Schafer's method would be tried first, and the rocking apparatus only if prolonged resuscitation proved necessary.

COMMENT

These two cases, and my experiments on the healthy person, show that this gravity method of actuating the inert diaphragm is effective. If used with the patient face downwards, it offers, in my opinion, many important advantages (which I need not detail here) over the ordinary methods in use for resuscitation after drowning or gassing or anæsthetics and the like. Apparatus can be extemporised, as shown for instance in Fig. 3. I hope later to publish a much fuller paper with cases. As these are hard to come by, I should be glad of collaborators. With the experienced help of Mr. W. Riley, of the Wakefield Mines Rescue Station, and of Messrs. Siebe, Gorman and Co., of London, I am engaged in perfecting the apparatus and the method. I conclude that the method is novel because it was not mentioned in the full discussion at the British Association last year.

My thanks are due to Dr. Muir and Dr. Jacobs for their cases; to Dr. Bannen for the skiagrams; and to Ivor S. Eve for much willing help.

FATAL POLIOMYELITIS IN ADULTS

WITH CASE REPORTS

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The death of three patients from acute respiratory failure of bulbar origin within a period of five days is a dramatic event even in a large general hospital. The three cases here recorded, although showing similar terminal symptoms, presented differences in other respects which gave rise to considerable difficulty in diagnosis during life.

THE FIRST CASE

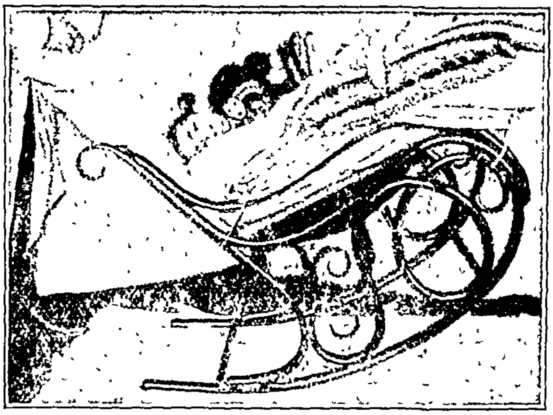
A nurse, aged 21, had suffered from a slight sore-throat for a week before the onset of the acute illness, for which she had not consulted a doctor, and during the last two or three days she had felt "off colour" and was constipated; she had also complained of insomnia. On the evening of August 30th she complained of slight pain in the neck and aching in the legs, but the temperature was normal; she did not however go on duty. The following morning she had a slight rise of temperature and had pain in the back; she was seen by one of us at 8 P.M. (August 31st) when she complained of pain in the neck, back, and legs. Her condition was in no way alarming, but she was rather restless and had difficulty in moving about the bed owing to the pain; the temperature was 100° F.

On examination there was tenderness on pressure over the neck, where there were some palpable lymph nodes, and there was slight neck rigidity. Kernig's sign was not present, though extreme flexion of the extended leg on the trunk was a little painful. The pupil reactions, *fundi, and tendon*-jerks were normal, and the plantar responses flexor. The abdominal reflexes however were absent and there was some disinclination to move her legs, although there was no definite loss of power; there were no sensory changes. No abnormality was discovered in the heart, lungs, or throat.

Course of illness.—She spent a very restless night despite a soporific, and about 5 A.M. she became much worse; at 5.30 she was desperately ill, with shallow breathing and cyanosis and complete absence of diaphragmatic movement. She had very little power in the legs but could move her toes; the pupils reacted sluggishly and the voice was feeble, but the tendon-jerks were still normal; consciousness was fully retained; the pulse-rate was now 98, respiration-rate 32, and temperature 97° F. Lumbar puncture was performed at once and the cerebro-spinal fluid pressure was found to be over 300 mm. At 7 A.M. she was unable to speak though she could recognise people;

middle on a trestle, and rocking up and down rhythmically so that the weight of the viscera pushes the flaccid diaphragm alternately up and down. *Anyone can convince himself that this method of* artificial respiration is adequate by lying on the apparatus in action. He will find that he need not breathe; it is done for him. Oxygen is not required—only air.

FIG. 1



CASE 1.—The child (dressed and convalescent) in the head-down position on the rocking-chair used when the diaphragm was paralysed. The retaining strap for the buttocks is missing.

TWO ILLUSTRATIVE CASES

CASE 1.—*Post-diphtheritic diaphragmatic paralysis* in a healthy child aged 2. Faucial diphtheria had developed five weeks earlier and had been treated with 8000 units of serum by Dr. Maurice Jacobs. A month after the onset he had noted nasal speech, nasal regurgitation, and some weakness *in the legs and neck. But the general* health was good and the child had been out in her pram for a few days. Then suddenly on Jan. 22nd, five weeks from the onset, the child became alarmingly ill. The nearest doctors were hastily summoned and they expected death in a few hours. I was asked to see the child by Dr. Jacobs who was then ill. I found her lying on her back, pale, and apparently drowning in her own gurgling bronchial secretions. The observation that the epigastrium did not rise in inspiration was sufficient, with the history, to give the above diagnosis.

The child was immediately put on her side, on pillows so arranged that the trachea was sloping decidedly downhill. The breathing rapidly became easier and quieter. In a few minutes a quantity of tenacious, frothy mucus could be removed from the mouth, the cheeks became pink, but there was the danger of pneumonia developing. The temperature then was 98° F. and never rose above 100°. Feeding was by egg-spoons of fluid, tipped into the lower cheek. *The same lateral tilted position was retained for* ten hours. It then occurred to me that, though the position was excellent for drainage, the weight of the abdominal contents would push up the diaphragm and cause some collapse of the lungs which would increase the risk of pneumonia. Further, that if a slow seesaw movement were provided the diaphragm would be pushed up and down by the viscera in imitation of its natural movements. Accordingly a rocking-chair was produced and a level bed made on it with several blankets. A towel pinned from arm to arm of the chair prevented *the child slipping* when the chair was tilted through 30° on each side of the horizontal. This was done by the parents about ten times a minute continuously for two days, except at meal times when the head-down position was maintained by a block (Fig. 1). The child appreciated the rocking, which conduced to sleep. No râles were heard, except after feeding owing to some pharyngeal paresis. Next day she was demanding biscuits in a nasal voice.

On the third day spontaneous movements of the diaphragm were to be seen in the epigastrium. It was unfortunate that radiography—by Dr. J. E. Bannen with a portable apparatus—had to be deferred to this day, but it shows the desired excursion of the diaphragm in the head-up and head-down positions.

Over-extension of the paralysed left sternomastoid was prevented by a strip of strapping approximating the mastoid to the sternum. The nurse was instructed to adjust pillows so that this was always kept in wrinkles and never taut. Foot-drop was similarly prevented by elastic. On the sixth day the child was very well, but feeding was still carried out in the head-down position to avoid risk of deglutition pneumonia.

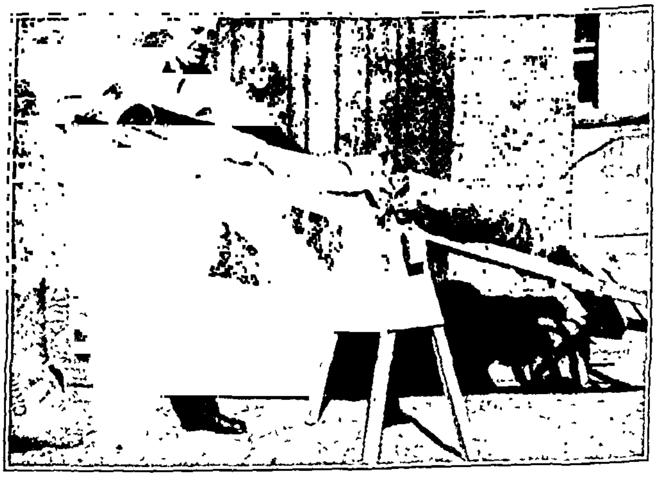
On the tenth day costal respiration ceased for four days. This caused no symptoms, which shows how unimportant *is costal respiration* compared with *diaphragmatic*; at rest it is redundant.

On the twenty-sixth day she could just stand unsupported. The neck muscles had recovered. Eventual recovery was complete.

CASE 2. *Landry's paralysis under artificial respiration.*—The patient was an athlete, aged 24, weighing 14 st. and 6 ft. tall. On August 2nd he was in his usual robust health and doing gymnastics. On the 3rd he was rapidly afflicted with paralysis of the legs and trunk, spreading later (partially) to the arms. After August 4th headache was severe. Respiratory difficulty started on the 6th. On the 7th he was admitted to the Sutton Annexe with marked retention of urine and *fæces. He was under* Dr. D. C. Muir, who very kindly allowed me to try this method of artificial respiration on him. I saw him on the 8th at 3 P.M. His legs were paralysed, arms weak, diaphragm not moving, but the upper ribs could be dragged up by the sternomastoids. Cyanosis slight, headache severe, swallowing normal, reflexes reported all absent. He was talkative; mentality a little abnormal and greatly distressed at his awful situation. Ordinary methods of artificial respiration could not have been tolerated in the state he was in. Accordingly at 6 P.M. a mattress was lashed to the special stretcher and the heavy patient lifted on to it easily by four persons. The stretcher was then lifted on to the trestle with his weight balanced over the pivots. A strong strap over his buttocks prevented his slipping (Fig. 2). Blankets covered him and he lay on his back.

Artificial respiration was started at 6 P.M. by rocking through 50° each way, regulated by a home-made mercury egg-boiler which allowed 4 secs. in the leg-down position and 3 secs. in the head-down. The latter promptly caused a *few ounces of clear* fluid to fall out of the stomach; perhaps the sphincters of the gullet were paralysed. There was some distension from flatus, but not enough to prevent visible excursion of the diaphragm. Evidently he felt relief from the rocking for, in spite of his distress, he demanded it for about five minutes every quarter of an hour.

FIG. 2



Rough apparatus used in Case 2; but here the subject is healthy and the position prone, as if for an unconscious patient.

After helping for three hours I left him in the able hands of our resident, Dr. J. D. Cooper, who spent most of the night with him, aided by two Toc H volunteers. Even with this cheap improvised apparatus artificial respiration was easy in diagnosis in each of them, the first on account of its fulminating course and scanty signs, the second because of the normal cerebro-spinal fluid, and the third on account of its resemblance to poliomyelitis in spite of its pathological distinction.

We wish to express our thanks to Dr. Veale for permission to use the clinical notes of these cases, and to Dr. Greenfield for his advice on the histological appearances.

Clinical and Laboratory Notes

THE TREATMENT OF LARYNGEAL TUBERCULOSIS

TWO PRACTICAL POINTS

BY SIR JAMES DUNDAS-GRANT, K.B.E., M.D. EDIN., F.R.C.S. ENG.

CONSULTING SURGEON TO THE CENTRAL LONDON THROAT AND EAR HOSPITAL AND TO THE BROMPTON HOSPITAL

IN dealing with tuberculosis of the larynx we have to afford relief from pain by every means in our power so as to counteract the steady downward progress which it initiates and maintains. The depressing effect, as much as the interference with nutrition, is from the psychological point of view deplorable. I and others have fully described methods which have found their way into current practice, such as the inhalation of such powders as anæsthesin and orthoform, the application of the galvano-cautery and alcohol injection into the superior laryngeal nerve. I have also pointed out elsewhere that a sudden attack of pain in swallowing, though sometimes due to an outburst of pharyngeal tuberculosis, is sometimes found to be the result of an ordinary acute tonsillitis passing off in a few days.

I wish, however, to indicate a cause of what patients call "pain," the relief from which is anxiously desired. In reality it is a painful "burning" stiffness of the pharynx caused by the drying and inspissation of mucus on the back wall, and is experienced chiefly on waking. Patients have frequently described the discomfort as severe pain and have been delighted to have it removed by gargling with a little bicarbonate of soda in water, warm if possible, otherwise cold. Such a solution can be put into a thermos-flask at night so as to be ready for use when the patient wakes up. I am sure that this condition is overlooked while deeper-lying sources of pain are being sought for. It seems a trifling method of treatment, but it gives great relief and is, of course, available to any practitioner if he only keeps the condition in mind and looks for it.

My second practical point is addressed to experts rather than to practitioners in general. In other places I have dwelt on pain as an indication and the strongest one for the galvano-cautery, and by no means as a contra-indication, as has been suggested. The typical tearing pain is almost invariably caused by a spot of ulceration, and if the exciting spot can be localised the application of a fine galvano-cautery point destroys the exposed nerve-endings and removes the pain. If there is a very small area of ulceration it may be difficult to find, and occasionally it lies concealed by an overhanging infiltrated epiglottis at the place where this joins the ary-epiglottic folds. If, on the other hand, the ulceration is very extensive, it may be only at some localisable spot that the pain is excited, and if the cautery is applied to other parts of the ulcerated area and not to the pain-exciting one, the relief is not forthcoming and disappointment ensues. The practical point that I wish to emphasise is that a laryngeal probe coated with cotton-wool should be applied to various parts of the larynx until the patient makes it known that the pain-producing spot has been touched. After cocainisation of the part the fine point of the galvano-cautery should be stuck into the spot, and in the absence of other sensitive spots pain is usually removed.

I see from time to time an ex-policeman who suffered from chronic pulmonary tuberculosis. When he was first referred to me swallowing was so painful that he was unable to take enough food to fight against the disease. I found a small ulcer on the middle of the margin of the epiglottis. I applied the galvano-cautery to the painful ulcer, and from that moment the excruciating pain disappeared; he was able to take food and make a good recovery, ultimately working hard on a chicken-farm.

Within the last few months I have been treating a man who suffered from fairly advanced tuberculosis. Temperamentally depressed, he was the picture of resentful misery and complained of intense pain in swallowing, especially on the right side. He used anæsthesin and orthoform powder, and had the superior laryngeal nerve injected on two occasions with only slight temporary benefit. I then tested the various parts of his larynx with the probe and found on the right ary-epiglottic fold an area of extreme tenderness. I punctured this spot with the galvano-cautery and hoped for the best, but in view of the patient's temperature I feared he would go rapidly downhill. A fortnight later when I asked to see him I expected to hear that he was confined to bed if, indeed, still alive. On the contrary, however, he had improved from the time of the localised galvano-cautery, took food, lost his depression, and was reported to have gone for an "outing." When next seen, he was fairly strong and quite cheerful. I am convinced that without the relief afforded by the localised galvano-cautery he would not have rallied.

My first "practical point" is addressed to the practitioner as simple and efficacious; the second is naturally more within the scope of the specialist, but with the increased attention to laryngology it may be applied by others. To all those who wish to practise such manipulations I cannot too strongly recommend the use of the left hand for holding the laryngeal mirror, in season and out of season, so as to leave the right one free for the handling of intralaryngeal instruments.

FŒTAL ASCITES

BY RICHARD H. HUNTER, M.D., M.CH., PH.D. BELF.

LECTURER IN ANATOMY, QUEEN'S UNIVERSITY, BELFAST

CASES of fœtal ascites, though rare, have been observed from time to time, and are of considerable interest to the obstetrician because of the difficulty in delivering the child's distended abdomen. The condition has been ascribed to many causes, among them (*a*) obstruction to the portal circulation, due to perihepatitis, syphilitic gumma, or tumours pressing on the portal vein; (*b*) chronic peritonitis due to syphilitis; (*c*) tumours or distended bladder pressing on the large vessels of the abdomen; (*d*) hypoplasia of the urinary organs; and (*e*) defects in the circulatory systems—e.g., absence of the ductus venosus or splenic vein. The present series of cases of fœtal ascites, though a short one, is of sufficient interest to warrant its publication because it includes examples of most of these causes.

CASE 1.—The abdomen of this specimen was enormously enlarged. There was no trace of an anal opening, and male external genital organs were present. The fluid which had caused the distension had been lost during the confinement, owing to the necessary surgical interference, and six pints of fluid were required to re-distend the abdomen to its original condition. An enormous "cyst" was found occupying the about this time she began to make plucking movements with her hands. She died at 8.40 A.M.

The C.S.F. contained 60 polymorph cells per c.mm.; chlorides 0·73 per cent.; no organisms seen; culture sterile. A partial post-mortem was carried out, the brain only being removed; it showed no naked-eye abnormality and was fixed intact.

Histology.—Medulla: There are two zones of acute perivascular softening and infiltration round vessels in the dorsal part of the medulla, probably in relation to the cells of the nucleus gracilis; there is perivascular infiltration with fairly large cells throughout the medulla, most marked in the dorsal part. Pons: There is infiltration by microglia and macrophages in relation to the sixth nucleus and substantia ferruginea; ventrally there are no definite zones of perivascular infiltration, but there is abundant infiltration in the dorsal region. Thalamus: There is slight perivascular infiltration of only a few vessels.

THE SECOND CASE

A female, aged 24, was admitted under the care of Dr. R. A. Veale on Sept. 1st. She had enjoyed good health all her life except for attacks of "influenza," which had occurred frequently during the past few years; these attacks consisted of coryza, slight cough, and pyrexia. Fourteen days before admission (August 18th) she developed an attack of the usual type which lasted about five days, but on the eleventh day (August 29th) she again felt poorly and developed aching pains and severe frontal headache; a diagnosis of "influenza" was again made. The following day, that is about 36 hours after the beginning of the recurrence, she felt some difficulty in getting out of bed and about the same time she noticed a feeling of weakness in the left hand. The next morning (August 30th) she found that the left side of the face was swollen, that she was unable to close her left eye, and that on swallowing fluid dribbled from the left corner of the mouth; the pain had disappeared and there was almost complete paralysis of the left arm. Forty-eight hours later she was admitted to hospital.

On admission she was complaining of diplopia on looking to the right, though there was no demonstrable ocular palsy; there was a complete left facial palsy of infranuclear type, otherwise the cranial nerves showed no abnormality. She was unable to raise her head from the pillow or to sit up. The left arm showed complete flaccid paralysis, and there was marked weakness and hypotonia of the right. The left leg was weak and hypotonic, the right being normal; the tendon-jerks in the arms were sluggish, the left knee-jerk was absent, the other jerks being normal; the left upper abdominal reflex was absent, the left plantar response extensor, and the right equivocal.

Course of illness.—The following day (Sept. 2nd) the right arm and the left leg were much weaker, the left lower and right upper abdominal reflexes had disappeared, both knee- and ankle-jerks were absent, and both plantar responses extensor. There was now some difficulty in coughing. On Sept. 3rd there was complete flaccid paralysis of the left leg with increasing weakness of the right; all the tendon-jerks were now absent, as were the abdominal reflexes; fine nystagmus was noted on looking to the left. During the next 24 hours there was increasing weakness of the right limbs; on the night of Sept. 4th–5th she developed respiratory distress, with numerous adventitious sounds in the chest, and cyanosis; death occurred at 11.50 A.M., consciousness being preserved up to the last.

The C.S.F. taken on Sept. 2nd showed four lymphocytes per c.mm.; protein 50 mg. per 100 c.cm.; chlorides 0·72 per cent. Blood Wassermann reaction negative.

Throughout the illness the fundus oculi was normal, there were no sensory phenomena, and no cerebral symptoms. There was neither sphincter disturbance nor insomnia. The temperature was subnormal throughout (97° to 98° F.), and the pulse-rate varied from 84 to 100, the respiratory rate being 24 with a terminal rise.

Post-mortem examination was carried out by Dr. J. G. Thomson at 3 P.M. on the day of death. There was severe mucopurulent bronchitis and intense congestion of the liver. The brain and spinal cord were fixed intact. Bacteriological investigations were carried out by Prof. J. W. McLeod, to whom we are indebted for the following details. Two rabbits were inoculated by corneal scarification with emulsion from the cortex and the medulla, and two other rabbits by intracerebral inoculation; all these animals remained normal. A monkey (*Macacus rhesus*) was inoculated by intracerebral injection; it was ill for three days and then returned more or less to its normal condition; about three weeks later it was noticed to be subdued and quiet and at present it lies in its cage and after walking a few steps will lie down exhausted; when walking it appears to have weakness of all its limbs though there is no paralysis.

Histology.—The spinal cord shows the typical changes of poliomyelitis with perivascular softening and infiltration with macrophages. Medulla: There is perivascular infiltration only. Liver: Apart from severe congestion there are no histological changes.

THE THIRD CASE

A boot repairer, aged 30, was admitted under the care of Dr. Veale on Sept. 2nd with a history of pains in the legs of one month duration; more recently there had been gradual loss of use of the legs.

The temperature was 99·2° F., pulse-rate 152, and respiration-rate 30. He was very pale, short of breath, and was vomiting everything; the liver was palpable and there was some clubbing of the fingers. There was a leucocytosis of 13,700 per c.mm. (polymorphs 91 per cent.), otherwise the blood showed nothing abnormal. The pupils were contracted and reacted very sluggishly to light; fundi normal. There was bilateral sixth nerve palsy, other ocular movements being normal. The legs showed complete flaccid paralysis with absence of the left knee- and ankle-jerks, those on the right being just obtainable; the plantar responses were equivocal. There was no sphincter disturbance. The cyanosis and respiratory distress increased and he died at 7.15 A.M. on Sept. 4th.

Post-mortem examination was carried out by Dr. Thomson. The lungs showed œdema and there were small bilateral pleural effusions. The stomach showed well-marked pyloric stenosis due to a healed ulcer. The brain and spinal cord were fixed intact and showed no naked-eye changes.

Histology.—There was no histological evidence of disease and Dr. J. G. Greenfield, who kindly examined the sections, thought the case to be probably one of Landry's paralysis.

COMMENTARY

The first of these cases is remarkable for its fulminating course, the patient dying within 36 hours of the onset of any definite symptoms and within 12 hours of the onset of physical signs; the first signs to appear were slight neck rigidity and loss of the abdominal reflexes, and there was marked tenderness on pressure over the shoulders and neck, in fact at this stage the possibility of fibrositis had been considered. The second case was a typical example of poliomyelitis of the spreading spinal type and it is of interest to note the left hemiplegic emphasis as well as signs of pyramidal involvement. The third case resembled the second in many respects and the two could not be differentiated clinically.

In all three cases consciousness was fully retained even though there was ultimate inability to speak. The cerebro-spinal fluid in the first case, the examination of which had not been completed when the patient died, was characteristic of an early stage of poliomyelitis, but the fluid in the second case was normal, although J. S. Collier[1] claims typical changes in 98 per cent. of cases.

The incidence of bulbar involvement in poliomyelitis is low (W. G. Scott Brown[2]), though the mortality in such cases is high, and it is interesting that these are the first two cases of poliomyelitis in adults that have been seen in this hospital for at least two years; nor have they coincided with any recent increase in the number of children admitted with the disease.

Unfortunately we had no opportunity of giving anti-poliomyelitis serum in these cases, though in this connexion W. D. Ayer[3] states that "bulbar cases are to be left severely alone" and in his opinion "lumbar puncture and intraspinal serum are sharply contra-indicated"; Collier, on the other hand, states that lumbar puncture can do no harm. It is possible that poliomyelitis serum might have saved the life of Case 2, though it would have been of no value in Case 3.

In conclusion, we are recording these cases in view of the epidemic of poliomyelitis at present existing in this country and would emphasise the difficulties contracted. The veins of the abdominal organs were engorged and the liver was congested. The œdematous condition of the organs extended to the heart, lungs, and brain. Microscopic section of the kidneys showed the early stages of congenital polycystic disease; the secreting tubules were greatly dilated and the glomeruli were congested. Unfortunately in this case, which was seen in private practice, the blood reactions were not tested. A history of previous miscarriages is, however, suggestive of syphilitic infection.

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[1] THE LANCET, 1927, i., 321.

[2] Ibid., 1931, ii., 1287.

[3] Proc. Inter-State Postgrad. Med. Assembly (North America), 1928, p. 319.

Three of the cases described are cases of true fœtal ascites, two having generalised œdema. One of these is due to a congenital maldevelopment of the kidneys, and the other two to interference with the portal system. In two of the four cases there is a definite maternal history of syphilis; in one there is a suggestive history of miscarriages; and in one there is no direct evidence of syphilis. This proportion of syphilitic cases is not in agreement with that usually described. Fordyce[2] collected 63 cases of fœtal ascites and found that syphilis could be definitely proved only in eight. Birnbaum and Blacker,[3] on the other hand, state: "The most frequent cause of this condition is no doubt syphilis." It seems probable that the modern methods of diagnosis of syphilis will show Birnbaum and Blacker to be right.

RESUSCITATION OF INFANTS

WITH CARBON DIOXIDE AND OXYGEN

By J. B. Blaikley, M.B. Lond., F.R.C.S. Eng.

GYNÆCOLOGICAL AND OBSTETRIC REGISTRAR, GUY'S HOSPITAL

Of recent months, following the long-delayed appreciation of the work of Haldane, Pembrey, and others in this country, and the work of Yandell Henderson and others in America, attention has been focused on the use of carbon dioxide as a respiratory stimulant, so that several articles have appeared in current journals, dealing more especially with its post-operative application, but also pointing out its value in the resuscitation of the newly born infant. My excuse for the present paper is to put on record the success that has attended the use of carbon dioxide in the midwifery practice of Guy's Hospital during the past six months, and, further, to make one or two points that have been learnt as a result of our experience. Originally the "sparklet" pocket outfit was used, but this has been modified by the addition of a rubber bag of about 3–4 litres capacity, and a face-piece of transparent celluloid[4]; furthermore, a mixture of carbon dioxide, 5–7 per cent. and pure oxygen is always used, for reasons to be given later.

While it must be very seldom that a newly born infant actually dies from asphyxia, this does occasionally happen, and for every one there are numbers in whom respiration is only established after prolonged asphyxia. Though it is difficult of proof, it seems only too likely that the cells of the central nervous system are liable, in these latter cases, to suffer from the lengthy period of anoxæmia. This may be inferred by analogy with older children, in whom the results are more apparent; for example, I well remember a child who was anæsthetised with gas and oxygen, but was allowed to become markedly asphyxiated; this child for days afterwards was completely irrational to the point of insanity. Again, occasionally an infant difficult to resuscitate lives two or three days and then dies after increasing difficulty with respiration and feeding: post mortem, nothing except the subserous petechial hæmorrhages of asphyxia are found. Death is presumably in such cases delayed but none the less the result of asphyxia at birth. Lastly, it must still be borne in mind that many authorities consider the spastic infantile paralyses to be the result of prolonged asphyxia at birth. It therefore does appear to be the right and proper course to limit the time during which asphyxia is present to as short as possible, for there is no reason to conclude that the brain of a newly born infant is immune to the damaging results of anoxæmia.

The first need of the child is oxygen, and for this reason we have used a mixture of carbon dioxide and pure oxygen; in this way, it is ensured that the first few breaths achieve the maximum in oxygenating the anoxæmic blood. From experience we are convinced that more rapid recovery is thus effected than from giving carbon dioxide mixed with air. When given by the closed method used, 5–7 per cent. carbon dioxide is sufficient to stimulate respiration, higher percentages seem unnecessary and may even be toxic in action.

The closed method of administration with a bag and face-piece has several advantages. In hospital, large cylinders of gas are available, but in portable form it is necessary to conserve the supply of gas. The bag may be filled and then the infant allowed to breathe in and out of it, the percentage of carbon dioxide slowly rises, and that of the oxygen slowly falls; 3–4 litres will last ten minutes, more than long enough for full establishment of deep respiration. Of even greater advantage is the fact that it is possible to give artificial respiration, sucking the gas in and out of the bag, so that the full use is made of the volume of lung expanded, the oxygen absorbed relieving the anoxæmia, and the carbon dioxide stimulating the respiratory centre. In the absence of spontaneous respiration, artificial respiration by Sylvester's method will expand about half of the lung volume. It is necessary to have an assistant to hold the mask in place and the jaw forward; he is also able to steady the infant by holding the feet. We have used bent tongue forceps[5] in order to ensure that there is a clear airway.

In addition to the benefits outlined above, there is no doubt that much anxiety is saved the obstetrician in rapid establishment of respiration; also, as has often been pointed out, full expansion of the lungs is to be anticipated, and there is little fear of subsequent symptoms of atelectasis.

I would thank the obstetric surgeons of Guy's Hospital from whose cases the experiences recorded above have been obtained, in particular Mr. Cook, who originally excited my interest.

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[2] Fordyce, W.: Teratologia, 1894, i., 143.

[3] Birnbaum, R., and Blacker, G.: Malformation and Congenital Diseases of the Fœtus, London, 1912, p. 184.

[4] I am given to understand that Messrs. Sparklets (Angel-road, London, N.18) are now making this mask standard.

[5] As made by Messrs. Down Bros., 21, St. Thomas's-street, S.E.1.

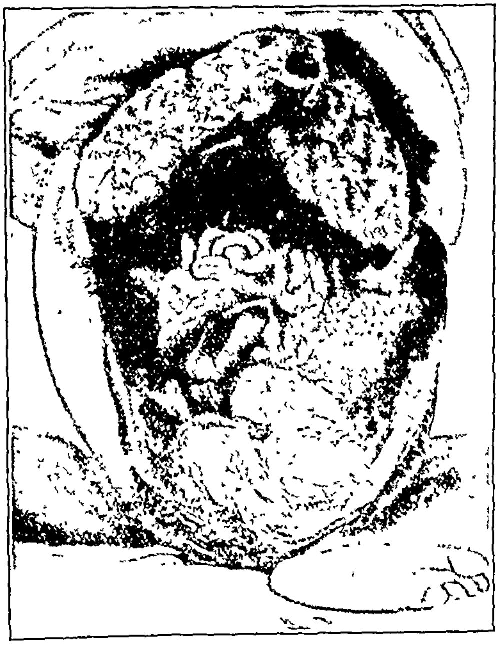
Coventry Hospitals.—The report of the Coventry and District Crippled Children's Guild for the year ending March 31st last shows that 1439 patients were treated, of whom 264 were discharged cured and 65 improved. There were over 10,000 attendances at the clinics. The report calls attention to the number of parents who refuse to have their children treated, and expresses a definite opinion that the law should compel parents, in case of need, to give their children the benefit of treatment.—Captain W. F. Strickland, M.P., recently formally opened the Alexander Private Hospital at Coventry. The institution has accommodation for 14 patients, and there is a theatre with other adjuncts.

Dr. Hebert Fleig Library
[illegible] Medical College

pelvic and right and left lumbar and subphrenic regions. A diverticulum of the "cyst" passed upwards, behind, and to the right of the coils of intestine, which were smaller than normal for a full-term infant. The lower end of the large gut was greatly dilated with meconium and was adherent to the upper and back portion of the left side of the "cyst"; the gut, however, had no opening into the "cyst," but ended blindly. The left kidney could not be distinguished, but in its position, below the suprarenal gland, there was some thickened tissue at the upper end of an enormously dilated left hydronephrosis, and this proved on microscopical examination to be the small amount of persisting kidney tissue. Both ureters were greatly dilated, and both passed through the wall of the "cyst." The interior of the "cyst" presented the appearance of a distended and greatly hypertrophied bladder, marked by numerous ridges due to the hypertrophy of the underlying muscle. The ureters opened into it by exceedingly small orifices which were by no means easy to find. The pelvic portion of the "cyst" was perfectly smooth; there was no trace of an opening from it. The testes were smaller than normal, and lay on the lower part of the dorsal surface of the "cyst." They were connected to it by short, well-developed, and unenlarged vasa deferentia which ran transversely medially, and opened into a shallow median diverticulum of the "cyst." There were no seminal vesicles. The maternal blood reactions were reported: Harrison + +, Fleming + +.

The "cyst" seems to have been an enormously distended urogenital sinus and ventral cloaca. The shallow diverticulum into which the vasa defferentia opened was smooth and had a thinner wall than the rest; this was the part of the urogenital sinus which should normally form the prostatic part of the urethra. This case, although described as one of "fœtal ascites," is really a case of arrested development of the hind-end of the fœtus after the urorectal septum had separated bladder from rectum, with imperforate anus and failure of fusion of the ectodermal part of the urethra with the entodermal part derived from the urogenital sinus. This defect of the urinary passage is one of the most uncommon forms of anomaly in the human fœtus, and in the literature at my disposal I have been able to find only one other similar case.[1]

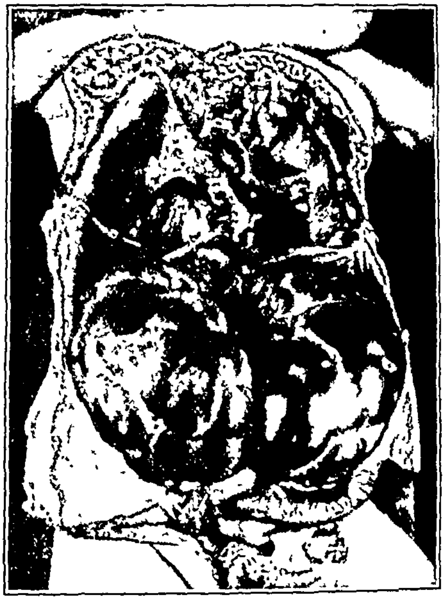
FIG. 1 (Case 2)



Dissection in Case 2, showing the nodular appearance of the atrophic liver.

CASE 2 was a full-term infant, delivered with the aid of forceps, and on external examination it appeared normal except for great distension of the abdomen. On opening the abdomen three pints of pale straw-coloured fluid escaped. The urinary organs were normal, but the liver was smaller than is usual in the newly born and had the rough nodular appearance typical of an atrophic multilobular cirrhosis (Fig. 1). Microscopical examination confirmed this diagnosis. The Levaditi technique for the demonstration of spirochætes was used on the liver, but they were not detected. The maternal blood count was reported: Harrison + +, Fleming + +.

FIG. 2 (Case 4)



Dissection in Case 4, showing the position of the large lobulated kidneys within the abdominal cavity.

The condition of this liver appeared to be due to fœtal syphilis or the chronic toxæmia of a maternal syphilitic infection.

CASE 3 was a fœtus of about the eighth month, born without assistance after a prolonged labour. It had the characteristic appearance of a generalised œdema. On opening the abdomen 160 c.cm. of deep amber-coloured fluid escaped, and from the left side of the opening an enormously enlarged spleen presented itself. This organ was found to measure 7 in. in length. The splenic artery was the normal size for a newly born infant, but the portal and splenic veins were small and had so narrow a lumen that a bristle could only be inserted with difficulty. This disparity between the splenic artery and vein seems to account for the engorged condition and enlargement of the spleen.

This was, therefore, a case of hypoplasia of the splenic and portal veins. The ascites was probably due to the hypoplasia of the portal rather than of the splenic vein, as it is known that experimental ligature of the splenic vein does not cause ascites, while ligature of the portal vein does. All the other organs of the body appeared to be normal, apart from the œdematous infiltration throughout the tissues. There was no evidence of syphilis in the fœtus, and the maternal blood was reported negative to both the Harrison and the Fleming reactions.

CASE 4.—This infant was apparently full-term and was delivered with forceps. It presented a generalised œdema and a distended abdomen. On opening the abdomen 200 c.cm. of amber-coloured fluid escaped, and two large lobulated, tumour-like kidneys were exposed (Fig. 2). The right kidney weighed 140 g. and the left 135 g. The ureters were extremely small, and it was not possible to pass even a fine bristle into their lumen. The bladder was small and number of cases the alleged accident could be shown to have no connexion with the death, but obscure causes were sometimes found for otherwise mysterious deaths.

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[1] Cruickshank, J. N.: Brit. Med. Jour., 1921, ii., 980.

Dr. **Morgan Finucane** took exception to Sir John's advice to doctors examining such cases to harden their hearts, put off their bedside manner, and remember that the work was "business." The doctor's business, for whichever side he appeared, was to work for humanity and to deal with his cases from a human and sympathetic point of view. Functional nervous disease was in itself a reason why an injured man should continue to draw compensation, and the courts had held during the last few years that nervous troubles arising out of employment were ground for recompense.

Mr. **Sydney Vernon**, as a solicitor in general practice, gave the opinion that one of the finest cures for neurasthenia was a lump sum in settlement. He urged doctors to use simple language in their dealings with laymen.

Mr. **W. M. Walker** denied that the best place for the discussion on compensation was the medical consulting-room. The Bar had an invariable rule that counsel did not leave chambers for the purpose of consultation, and he felt that this was right. The case was to be tried not in a court of medicine but in a court of law, and the atmosphere of a barrister's chambers was a more desirable approach towards the courts. The Bar resented the tendency towards a medical tribunal which would be induced if barristers had to go to the medical consulting-room. The speaker pleaded for the simplification of the mass of certificates necessary under the National Health Insurance Act, which demanded that a doctor should be almost as good a draughtsman as a conveyancing solicitor. Some scheme should be evolved, he held, for deciding whether a man was a malingerer or not without the present multiplicity of consultations. Doctors should be less reluctant to give evidence against one of their own profession who had clearly made a mistake.

Dr. **R. A. Lyster** took exception to Mr. Walker's criticism of the procedure under the Act. The Institution of Medical Referees had deterred many persons at the outset from making claims, and these officers had frequently exposed unjustified demands on the fund. A doctor had no need to be a draughtsman, but only to give rather more care than before in coöperating with the approved society.

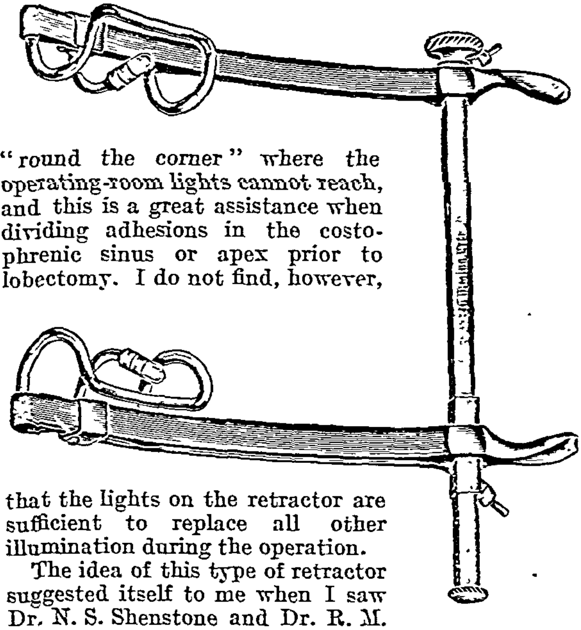
The **President** said that in his experience injured workmen were only too anxious to get back to work, and often made nuisances of themselves by hanging round the works before they were fit. He stressed especially the necessity for medical witnesses to learn how to behave in the witness-box. He reminded doctors of their great responsibility towards a claimant and his family in deciding whether or not the injured man should return to work.

Leeds Mental Defectives.—Dr. Arthur Hawkyard, chairman of the Leeds corporation mental health services committee, has recently opened extensions of the Meanwood Park Colony. There are seven new buildings, consisting of three villas for adult female defectives, each housing 60 patients; two villas for 50 boys and 50 girls respectively; a villa for 20 male and 20 female low-grade patients; and a school. The buildings have been placed round Meanwood Hall, which is the headquarters of the colony. The cost has somewhat exceeded £52,000, but it is expected that £5000 per annum will be saved by transferring patients from other institutions outside the city.

NEW INVENTIONS

A RIB-RETRACTOR FOR MAJOR THORACOTOMIES

This instrument is a modification of the ordinary abdominal retractor. The arms are longer and slightly curved so that they will lie against the chest wall; also the blades are 2¼ inches wide and curved to a semicircle. In addition it carries a 3-volt lamp on each side for illumination. The light carriers, which are curved to the shape of the blades, clip on to the arms and at their other ends are connexions for the electric leads. These leads are rubber-covered and sterilised by boiling. The lights will illuminate "round the corner" where the operating-room lights cannot reach, and this is a great assistance when dividing adhesions in the costo-phrenic sinus or apex prior to lobectomy. I do not find, however, that the lights on the retractor are sufficient to replace all other illumination during the operation.



The idea of this type of retractor suggested itself to me when I saw Dr. N. S. Shenstone and Dr. R. M. Janes at the Toronto General Hospital using a Balfour abdominal retractor for the ribs in thoracotomies for one-stage pulmonary lobectomies.

It is not intended that this instrument be used for forcing the ribs apart as Quervain's rib-spreader is used, but as a retractor to maintain the opening after the ribs have been spread. A description of a thoracotomy will best illustrate how the instrument is used:—

> The intercostal muscles and parietal pleura of the selected intercostal space are divided from the costal cartilage in front to the transverse process behind. The ribs above and below the incision are divided posteriorly at the tip of the transverse process. the fingers of the two hands are then inserted into the chest and the ribs steadily but forcibly pulled apart. The hands are then withdrawn and the rib-retractor is inserted and opened out. By this means one obtains in an adult a spread of 4–4½ inches between the ribs at their widest part.

I have used this thoracotomy for lobectomies; it also provides an excellent approach in operation for diaphragmatic hernia and exposure of the œsophagus or mediastinum in certain cases. This approach to the hemithorax causes surprisingly little shock, provides an enormous opening which can be easily and rapidly closed, and leaves no deformity of the chest wall.

I would like to thank Mr. Schranz, of the Genito-Urinary Manufacturing Co., for the trouble he took in making this instrument for me.

H. P. Nelson, M.B., F.R.C.S.

MEDICAL SOCIETIES

THE MEDICO-LEGAL SOCIETY

AT a meeting of this society on Oct. 27th the chair was taken by Lord RIDDELL, the President, and a paper on

Fraud in Medico-legal Practice

was read by Sir JOHN COLLIE. He advised the practitioner examining a medico-legal case to dispense with his bedside manner, for this was a business transaction. He must, however, retain his tact, for judgment, skill, foresight, and even experience were beads unstrung without infinite tact. The consulting-room was the best place for the examination; it was the doctor's own house, his own room, and he was master; the mental effect was enormous. The examiner should not be in too great a hurry to diagnose a malingerer, lest he should have the experience of an honorary surgeon who had walked into his ward one day and said to his house surgeon, "Well, Jones, and how are they to-day?" "All well," the house surgeon had replied, "except the malingerer in the corner, and he died last night."

A medical report should be in plain and business-like language. Insurance companies were neither interested nor impressed by technical terms. If technicalities must be used they should be put in brackets. Notes should be taken at the time of examination and preserved. In a difficult case the report should not be written until a few hours, preferably a day, after the examination. The proportional values were astonishingly different when viewed in perspective. Time should not be wasted labouring academic points of no practical utility. A report should not be biased by sympathy. Sentiment had its proper place, but was ill-matched in co-partnership with business. The late Sir George Savage had said that an opinion must be formed along one of two lines, one representing judgment and the other sentiment, but that those lines were parallel and never met.

The medical witness must not be surprised if it was insinuated in court that he was fundamentally ignorant of the elementary facts of his profession. He should take no notice. It was all a game, and he had better try to enjoy it. One piece of advice the speaker urged: when a case is lost, forget it and leave the solicitors to worry. The conscientious performance of one's duty in insurance work did not lead to an excess of popularity. The witness should never be afraid of admitting that he was not omniscient, but when the road bent abruptly he should take short steps. He should tell counsel with apparent candour that he was not a specialist; that a specialist knew everything about something, but that he had always aimed at knowing something about everything. This was not a clever statement, but it appeared so, and might help the witness round an awkward corner in the rough and tumble of cross-examination. Sometimes he would be asked whether a man was malingering, and would know that if he said "Yes" everyone in court would be angry. The best answer was that he had thoroughly examined the man, that it was true that he complained of many things, but that no physical signs could be found. The witness could truthfully say that he did not know whether this was a malingerer or not. It might then be put to him: "This man is not working and you say he is not a malingerer." The right answer would probably be: "He is really physically fit, but he requires that push towards usefulness which many men off work require. He is an irresolute individual, and would have a little inconvenience at first, which a reasonable man would put up with. He has not any real incapacity, but he has a feeling of inability caused by nervousness, all of which would be overcome by work. He is brooding over his recent injury, and the compensation he is receiving takes away the stimulus to work. Half-wages mean semi-starvation, and have a bad physical and moral effect." The witness should never go into the box without having had a radiogram of his subject taken, or he would be sure to be confronted with one taken by the other side.

Pain in the back was in most cases psychical, not physical. Nine-tenths of the subjective symptoms met with in trifling accidents were the result of auto-suggestion. The art was to determine how much was due to trauma and shock and how much to a perverted mental outlook. Neurotics who had had accidents were in much more need of treatment than was their traumatism, for they were facile and their thoughts ran along the lines of least resistance. The keynote to the successful treatment of a neurasthenic was to get the patient to make an optimistic inventory of his mentality. Re-education, both mental and physical, was the be-all and end-all of the cure. There was a definite relationship between the duration of an illness and the loss of the work habit; it was of the first importance to recommend return to work at the earliest possible date. Counter-suggestion was of infinite value, but if it was to succeed it must be immediate, forcible, continuous, and applied at the psychological moment. Suggestion was the art of getting an idea into someone's head without his knowing it. Everyone practised it daily—by manner, by facial expression, by mode of address, by self-confidence, and by clothes. Suggestion must not be put in a bottle. It could not, however, be practised as a duty; it was the work of an enthusiast. The man who threw himself into it, body, soul, and spirit, would succeed while half his neighbours were spending their time writing prescriptions for bromide of potash and the other half writing chits "to account rendered." Such men should take a holiday, for the doctor's holiday was the patient's opportunity.

Functional nerve disease was a combination of reality and unreality. It was like a battery with everything in working order and nothing lacking except the capacity to switch on the current. Many of these unhappy people might become chronic invalids or might return to work; the result depended entirely on the doctor. Very much more than was generally supposed depended on whether the doctor threw the weight of his personality into the diagnosis of traumatic neurasthenia and hysteria. His most valuable asset was a knowledge of human nature.

DISCUSSION

Sir BERNARD SPILSBURY said that the post-mortem room, like Sir John Collie, was a great revealer of malingering. Allegations were sometimes made in the coroner's court that death was connected with some previous accident, which had often taken place a long time before, and the alleged sufferer had drawn considerable sums of money in compensation. In other cases a relative suddenly remembered after death that the deceased had undergone an accident some years previously. In a very large

Laboratory Service and the General Practitioner

By ARNOLD RENSHAW, M.D., Director of the Laboratory of Applied Pathology and Preventive Medicine, Manchester. London: Humphrey Milford, Oxford University Press. 1932. Pp. 267. 10*s.* 6*d.*

THE object of this book is to interpret to medical men, be they general practitioners, specialists, or consultants, the application and meaning of laboratory work in clinical medicine. The scheme of the book is well designed, and few instances in which the laboratory can help the practitioner escape mention; one such omission which might be rectified in future editions is the failure to mention *Br. abortus* as a possible cause of prolonged pyrexia. Instruction on the collection of specimens are detailed and precise. In the section of blood grouping and matching, the author has adhered to the old numerical nomenclature instead of adopting that according to the presence or absence of the agglutinogens A and B. The numerical nomenclature has been the cause of much confusion in the past and might now well be forgotten. A word of warning about the danger inherent in blood matching or grouping tests performed by those not thoroughly conversant with laboratory technique might have been advisable.

Dr. Dan McKenzie supplies an introduction in which he wholeheartedly recognises that pathology is not the "handmaiden" of clinical medicine, but an integral part thereof. Far from wishing to keep the pathologist chained to his bench, he realises that in clinical work the best results are attained when there is direct touch between the expert pathologist and the patient. Dr. McKenzie hails the advent of the "physician-pathologist" with confidence in his power to aid in the advancement of medicine.

Tuberculose osseuse et osteo-articulaire

By ETIENNE SORREL, Chirurgien de l'Hôpital Trousseau, Ancien chirurgien en chef de l'Hôpital Maritime de Berck; and Mme. SORREL-DEJERINE, Ancien interne des Hôpitaux de Paris. Paris: Masson et Cie. 1932. Pp. 514. Fr.350.

THE Hôpital Maritime de Berck contains 1500 beds and during the period 1920–30 the authors and their collaborators collected as many as 10,000 cases of bone and joint tubercle, many of which they were able to watch from beginning to end. With this wealth of material on which to draw it is not to be wondered at that they have succeeded in producing a notable work, based upon the lectures which Dr. Sorrell gave to French and foreign surgeons, twice a year, during his eleven years' sojourn at the hospital. Of the four main sections the first is devoted to tuberculous osteitis, which includes spina ventosa of the small bones of the hand and feet, and central abscess; the second deals with tuberculous osteo-arthritis of the upper limb; the third with the lower limb; and the fourth with spinal caries. Having set themselves the ideal of making this an essentially practical book, they do not, when discussing pathological anatomy, describe post-mortem specimens, neither do they discuss whether the lesion starts in the synovial membrane or in the epiphysis. Whichever tissue is primarily affected both very soon become involved, and the question does not affect treatment. Such operative procedures as synovectomy are condemned as irrational and unscientific. The accounts of pathological anatomy, to which a good deal of space is allotted in each chapter, are studies of the progress of the disease from a radiographic point of view. The X ray pictures are abundant, beautifully reproduced, and show typical stages in almost every bone and joint in the body. Two fundamental principles appear to be recognised as guides to treatment: (1) epiphyseal cartilages offer considerable resistance to the spread of the disease, and (2) in the adult as opposed to a child a complete cure can never be anticipated.

As an illustration of the first-named principle the observations on tuberculous disease of the wrist-joint are of interest. The primary focus is said to be almost always a spina ventosa of one or other of the second, third, fourth, or fifth metacarpal bone, but never of the first, because the epiphyseal cartilage is proximal in the latter and distal in the former. Since the centres of ossification of the carpal bone appear irregularly between the ages of 1–6, and are not complete until 12, the cartilages of the carpal bone offer a resistance to the spread of the disease to the radio-carpal joint for a very long time. The disease therefore tends to remain localised to the carpal bone, particularly to the os magnum and unciform whose centres are the first to appear, and as a result 80 per cent. of these cases are cured with the preservation of good movement at the wrist-joint itself. After the age of 12, however, the wrist-joint soon becomes involved, and in order to avoid this, from that age onwards, the authors recommend excision of the carpal bone, which, they claim, gives good functional results. In the ankle-joint they advise operation at an even earlier age. Here the primary focus is in the astragalus, and it tends to spread to the ankle and sub-astragaloid joints. It is useless, they say, to waste time in prolonged conservative treatment, because the best that can be hoped for is a cure with a stiff ankle and a stiff foot. Consequently, as soon as a diagnosis is established and particularly if an abscess forms, they perform an astragalectomy, thus reducing the period of treatment and preserving useful movement at the new ankle-joint. For most of the other big joints they recommend conservative treatment until adult life, except in cases of juxta-epiphyseal abscess, which should always be operated upon early, so as to prevent the spread of the disease into the epiphysis and ultimately into the joint.

Though tuberculous disease is more destructive in the child, and greater deformities are apt to occur, it does, however, tend to get cured with a firm bony ankylosis. In the adult, on the other hand, bony ankylosis never occurs spontaneously, and there is a tendency for cavities to form containing sequestræ and tuberculous granulation tissue. This tissue may remain quiescent for years but may flare up acutely from time to time. Hence in all cases of primary adult tubercle, or the continuation of the disease from childhood into adult life, some operative procedure is recommended; broadly speaking, this usually means an ankylosing operation in the lower limb and excision in the upper limb. It is emphasised, however, that no such operation should ever be undertaken during the early stages of the disease, and that a period of at least six months' conservative treatment should precede it.

The chapter on spinal caries is of particular interest, because it includes a discussion on Potts paraplegia, a subject of which Madame Sorrel-Dejerine has made a special study. Two varieties are recognised; the commonest occurs early in the disease,

REVIEWS AND NOTICES OF BOOKS

Radiotherapy in Cancers of the Upper Air-passages

The Relative Value of Radiotherapy in the Treatment of Cancers of the Upper Air-passages. By W. DOUGLAS HARMER, M.A., M.B., F.R.C.S. London: John Murray. 1932. Pp. 85. 6*s.*

Mr. Douglas Harmer has performed a valuable service in publishing his Semon lecture of last year [1] in book form, for the subject matter of his address necessarily involves the use of numerous statistical tables which demand close study and are not easily to be digested during the delivery of a lecture.

The work gives details of the technique and results of radiotherapy, not only as practised by Mr. Harmer and his colleagues at St. Bartholomew's Hospital, but of workers in this subject all over the world, and deals with the treatment of malignant tumours of all parts of the upper air-passages. There is neither index nor table of contents, and the page headings do not indicate which region is under discussion, so that it is rather difficult to find rapidly the details about treatment of a particular organ. The statistics supplied do not readily lend themselves to analysis, but some of Mr. Harmer's opinions and conclusions may be mentioned. His insistence on the importance of early diagnosis and early treatment loses none of its weight by being a reiteration of an already familiar warning, and this applies also to his dictum that "under no circumstances must a cancer case be placed on a waiting list." He considers it very dangerous to damage these tumours by partial operations, or even to perform a biopsy until the patient can be radically treated; it is safer to remove a fragment by endothermy or after ray treatment has been given. He believes it is a mistake to use the thin filters of 0·5 mm. of platinum which have been in vogue, and finds it safer to employ filtrations of 0·6, 0·8, or even 1 mm., in order to prevent œdema, perichondritis, and late reactions.

In the treatment of intrinsic growths of the larynx Mr. Harmer, as is well known, is a pioneer of the application of radium by means of needles inserted through a fenestration in the thyroid cartilage; this has given him such good results that he no longer considers that it is ever necessary to remove these growths by surgery. As regards the anæsthetic, he employs gas and oxygen with a small amount of ether after grs. 3 of nembutal by the mouth, and morphia gr. ¼ with atropine gr. 1/100 hypodermically. Sepsis must be avoided at all costs; it is generally possible to prevent suppuration by closing the skin wound completely. Infected teeth should always be removed previously. The growth should never be damaged, care being taken not to cut through the perichondrium which surrounds it. Tracheotomy should not be performed if the opposite cord is movable and the glottis adequate; when in doubt the front of the trachea can be exposed and left ready for an opening if necessary. With these precautions he has had only one death after this operation in 47 patients. The results have been very good among those cases suitable for thyrotomy, which operation, it may be mentioned, also gives very good results; that it is less good among those suitable for laryngectomy, and still less in inoperable cases, is to be expected and accentuates the necessity of early diagnosis and treatment. The remainder of the book deals with the pharynx, palate, cheek, and nose and accessory sinuses. Numerous statistics are provided, and there is a good bibliography.

The monograph will be valuable to specialists in this field, and of value to all practitioners who meet with a patient suffering from cancer of these regions.

Les réticulocytes et les réticulocytoses

By Dr. C. M. LAUR, Préparateur Adjoint à la Faculté de Médecine de Paris. Paris: G. Doin et Cie. 1932. Pp. 160. Fr.35.

THE occurrence and behaviour of the reticulocytes in the circulatory blood has been closely studied in recent years. Dr. Laur reviews the early literature dealing with these immature cells in great detail, and also discusses fully the chemical and physical nature of the reticular substance. He concludes, as the result of his own experimental work, that the punctate basophilia of lead poisoning is a different phenomena from the reticulum of the young red cell, a conclusion which might be questioned by many hæmatologists. The pathological conditions, in which a transitory or permanent high reticulocyte count is found, are discussed, and many examples from the author's own case records illustrate this chapter. Unfortunately some important recent work is omitted. The type of curve found in microcytic anæmias in response to iron therapy is not discussed. Little stress is laid on the strictly quantitative nature of the reticulocyte response to adequate treatment in pernicious anæmia. The author certainly states that he has found it impossible to enter into all the details of recently published work, but it is disappointing to find a specialist who takes the trouble to write a monograph unwilling to present the common reader with an up-to-date analysis of his subject.

Quick Reference Book for Medicine and Surgery

Eighth edition. By G. E. REHBERGER, A.B., M.D. London: J. B. Lippincott Company. 1932. In 11 parts. 65*s.*

THIS large volume claims to be a clinical, diagnostic, and therapeutic digest of general medicine, surgery, and the specialties, culled "extensively and intensively from modern literature, and systematised." Diseases and disorders are arranged alphabetically in each of the 11 sections, and a thumb-index to each section facilitates quick reference. The compilation has been done single handed, and it is almost inevitable that an expert looking at the particular section that concerns him will find something to criticise—either some inaccuracy, or some information that is now out of date. But the fact that the articles under each heading do not bear the stamp of the expert will not distress the average reader, who will find here what he seeks—a concise note setting out essential points. The allotment of space is not always wise—for example, tables for finding the pH value of a solution would seem unnecessary in a book designed to meet the needs of a busy practitioner. But of the mass of information provided the greater part will be found useful at one time or another.

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[1] See THE LANCET, 1931, ii., 1057.

Reminders and Suggestions

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LITERATURE AND SAMPLES ON REQUEST FROM

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reaches its maximum in a few weeks, and gradually, during the course of 18 months to two years, tends to improve under conservative treatment. The second variety appears late, is slowly progressive, and shows a tendency to exacerbations and remissions. The first variety is usually said to be due to compression by an abscess, but the authors prefer to make a distinction between paraplegia with an abscess and that due to an abscess. They maintain that the symptoms are often caused by circulatory disturbances in the cord, secondary to inflammatory reaction, with or without abscess formation, in close vicinity. In this way they explain the commonly observed phenomenon of increased knee-jerks and extensor plantar reflexes, in most cases of dorsal caries without any other compression symptoms. The second type of paraplegia is due either to a tuberculous meningitis, or to a kinking and destruction of the cord by a jagged piece of bone. For neither type do they recommend laminectomy.

It is difficult to speak too highly of this work. Whether or not the reader agrees with the point of view set out is immaterial. What the authors have to say is said remarkably well and is the fruit of long experience. It is said, moreover, in very simple French and within the understanding of those with only a modest knowledge of the language.

Alfred Fripp

By Cecil Roberts. London: Hutchison and Co. 1932. Pp. 288. With 14 illustrations. 15*s*.

This biography has been written at the request of his widow and is a personal chronicle of events and not a critical biography of a consulting surgeon. Sir Alfred Fripp revealed himself much in his diaries of which full use has been made, and the book derives its interest from the intimate comments which it contains upon the leaders in social circles of the Edwardian period. Sir Alfred Fripp was instrumental in raising very large sums of money for Guy's Hospital, and throughout his life showed his deep attachment to the foundation where he made his mark as an athletic student and taught assiduously for years, and whence he retired as senior surgeon after thirty years of consecutive service.

Die Nervenkrankheiten des Kindesalters

Second enlarged edition. By Prof. Dr. Georg Peritz, Berlin. Leipzig: Fischers Medizin. Buchhandlung. 1932. Pp. 688. Mk.39.50.

No less than twenty years have elapsed since the original edition of this text-book appeared, and it may be imagined to what extent a new edition must have required remodelling and rewriting; the author remarks in his preface that it possesses "ein anderes Gesicht." In its present form the volume embodies not a few matters of recent acquisition, such as the study of the capillaries of the nail-bed in relation to vasomotor neuroses and spasmophilia; acidosis in its bearing on various nervous phenomena and syndromes; new conceptions of hydrocephalus; "pink disease"; and others that need not be specified. The sections dealing with malformations and congenital defects are rather more detailed than is usual in books of the kind, and this is an advantage. Considerable attention is paid to the problem of the nervous child and to neuroses in childhood generally.

While there is abundant evidence of the skill with which recent increments to knowledge have been incorporated, it is surprising to find comparatively little notice taken of varieties of meningitis aside from those associated with tubercle and sepsis, and still less of the encephalitis accompanying many of the exanthems and other fevers of childhood. The articles on cerebral tumour and on epilepsy contain a mixture of old and new conceptions which is not altogether satisfying. Still as a whole this text-book is both compendious and accurate; it is well printed and illustrated, and there are some references to the literature in footnotes to the pages, though many more names are mentioned in the text than are thus particularised.

Handbook of Bacteriology

Third edition. By J. W. Bigger, M.D., Sc.D. Dub., F.R.C.P.I., D.P.H., Professor of Bacteriology and Preventive Medicine, University of Dublin. London: Baillière, Tindall and Cox. 1932. Pp. 459. 15*s*.

This text-book of medical bacteriology fills a useful place in the student's library. While giving a clear account of the bacteriological knowledge which he should require, Prof. Bigger has kept the size of his book within reasonable bounds. The new edition is only seven pages longer than the second, which appeared three years ago, and does not differ from it materially, most of the alterations being of minor importance. The book should retain its popularity, for, if dogmatic, it is accurate as well as concise.

Intracranial Suppuration

By E. Miles Atkinson, M.B., B.S. Lond., F.R.C.S. Eng., Surgeon in charge of the Ear and Throat Department, Royal United Hospital, Bath. London: Jonathan Cape. 1932. Pp. 127. 5*s*.

The Modern Treatment Series, to which this little book belongs, aims at presenting the generally accepted views on special subjects in a readable and concise form. This volume conforms to such an ideal. It gives a very fair account of intracranial sepsis based upon current medical opinion and on the author's own considerable researches. Mr. Atkinson rightly emphasises the earlier signs of intracranial suppuration, signs which at first may not be at all characteristic, but whose enumeration serves the very important purpose of suggesting to the practitioner that these diseases, rare in his practice, must not be entirely ignored. Short descriptions of operative procedures are also incorporated in this book. For those who wish to study the subject further or require more precise information on technique, excellent bibliographies are appended to each chapter.

Hints to the Young Practitioner

By G. Francis Smith, M.R.C.S. Eng., L.R.C.P. Lond., Consulting Surgeon, Peace Memorial Hospital, Watford. London: Oxford University Press. 1932. Pp. 156. 5*s*.

This is a wise little book. The chapters form suitable counsel to the young general practitioner. The advice given conforms with universal experience, and this of course makes much of the teaching obvious, but the precepts are so clearly arranged and the information is given in such a sympathetic manner that the author should find his work successful. He deals shrewdly with difficulties arising in the early days of general practice.

THE LANCET

LONDON: SATURDAY, NOVEMBER 5, 1932

RADIUM THERAPY

YEAR by year the reports from the research centres working with radium lent by the Medical Research Council are summarised in a green book issued by the Council, with appropriate comments from their Radiology Committee. The book in our hands (Special Report Series No. 174) is the tenth to be issued on this subject, and comparison with its predecessors shows that progress has been made on expected lines, though not so smooth and rapid as some had hoped. The first of the ten reports (No. 62) dealt with the initial therapeutic trials made when the whole stock of radium bromide collected for military purposes during the war, afterwards to be distributed between nine centres, was concentrated at the Middlesex Hospital.

The first summary of reports from the centres (No. 90) appeared in 1924, and dealt with work in progress in 1923. It is here recalled because, while disappointment had attended the use of radium in malignant growths of the mouth, jaw, and throat, the conclusion was already reached (p. 31) that in the treatment of cancer of the uterus radium is an agent of unquestionable value, and in cancer of the breast the increasing use of radium, combined with surgery, was already giving good results. It is significant perhaps of the growing complexity of the subject that whereas in 1924 the comments of the Radiology Committee were presented in the form of a conclusion to the summary of the various reports, in 1932 they are presented only as an introduction. But the main lines of radium therapy at the present time are still the treatment of cancer of the breast and the cervix uteri. The buccal cavity, however, is now placed among the more, instead of among the less, hopeful regions, though statistics reveal that the expectation of life of a patient with a primary growth of the tongue which has extended to the glands of the neck is still very low. A comparison between radium and surgery in this region can hardly be made, because present-day therapy consists largely of a combination of surgical and radiological methods; but it can at least be said that the mutilating operation of excision of the tongue has now given place to radium treatment. As to the breast, though the immediate mortality is very low, the results returned in these annual reports give the impression either that the expectation of dealing successfully with the inoperable breast cancer must not be placed too high, or that radiological methods for this site have not yet been fully explored. It is suggested that better results in this region may have to await a hopeful lead from experimentalists in radio-sensitiveness and radio-resistance. If, however, recent views on damage to endothelium as the true basis of the apparent selectivity of radium as used in treatment are confirmed,[1] little practical help can be expected from any attempts at differentiation which ignore this factor. At present most surgeons would go still further, and agree with Mr. B. W. WILLIAMS (see p. 1017) that early growths in regions in which operative treatment gives excellent results should not be subjected to treatment by radium alone unless for any reason operation is contra-indicated. If Mr. WILLIAMS's review of the present position of radium therapy in general seems unduly pessimistic, this impression was dissipated in the minds of those actually present at his lecture by the demonstration of a dozen successes in inoperable cases. His contention that radium treatment is still at a stage of empiricism is confirmed by the variations in technique adopted at different centres. As he says, principles are only emerging painfully and slowly, and all the rules being formulated appear to be subject to confounding exceptions. This is what makes the teaching of radium therapy so difficult, especially in view of the occurrence of occasional distressing complications which may or may not be attributable to radiation. For example, the Cardiff centre reports on 22 cases of fistula formation among the 254 cases of carcinoma of the cervix treated with radium during the last ten years. In none of these cases—all but one advanced and inoperable—did the fistula form immediately after treatment, but the conclusion that this delay precludes the possibility that they were due to it seems hardly justifiable. The University College Hospital report, which was published as a separate book last May, contains interesting notes on some sequelæ of irradiation, including pain and radionecrosis, acute and delayed, and on the effect of irradiation of the eye. Two cases of blindness following treatment were reported, neither being satisfactorily explained. Observations on cases in which radium has been applied close to the eye are being made, and the results will be discussed next year. At this hospital proctitis has been found to be far the most important sequela of irradiation for cervical carcinoma. Mild and transient attacks of proctitis are found to be very common and to be difficult to avoid if treatment is adequately carried out. Severe and lasting cases which make the patient miserable are happily less common; they are attributed to inadequate precautions to protect the rectum when the vagina is plugged. The General Hospital, Birmingham, draw attention to the dangers of the use of radium in unskilled hands in connexion with the radio-necrosis and delayed burning which may follow treatment of cancer of the buccal cavity, while an underdose appears sometimes to stimulate the growth. St. Bartholomew's Hospital, reporting on adenocarcinoma of the rectum, point out that in these growths the margin between a lethal dose and an overdose is small, and that success probably depends on an intensity of

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[1] See THE LANCET, 1932, July 23rd, p. 195, and Oct. 15th, p. 860.

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THE HEALTH OF THE MERCANTILE MARINE

FOR some years we have published annually in our columns an analysis of the statistical information regarding the deaths of seamen, issued by the Board of Trade in the Annual Return of Shipping Casualties to, and Deaths on, Vessels Registered in the United Kingdom.[1] It has been our object to call the attention of our readers to the general conditions of health, accommodation, and sanitation amongst the men of the mercantile marine, it being our belief that the care of the merchant seaman in these directions has not been of the same standard as that required amongst the population on shore; that although advances have been made on their behalf progress has been less rapid at sea than on land.[2] A more efficient care of the seaman's health would be secured, we suggested, by a transference of responsibility from the lay Board of Trade to the Ministry of Health. In this proposal we were in agreement with the Royal Sanitary Institute, whose view it was that both the compilation of mortality statistics and the care of the seamen's health should be entrusted to the Ministry of Health, a department especially organised for these duties.[3] Peculiarly welcome, therefore, was the appointment in 1928 of a standing Joint Advisory Committee of the Board of Trade and the Ministry of Health to advise the two departments on questions affecting the health of the mercantile marine. One of the problems to which this committee paid immediate attention was the provision of a statistical measure by which the health of the industry could be assessed, a measure which so far had been lacking except for the very inadequate statistics at the Board of Trade's disposal. The conclusion was reached that, while the preparation of complete morbidity statistics for the industry was probably impracticable, it was highly desirable that a thorough statistical investigation of the mortality of merchant seamen should be undertaken. Arrangements were made with the London School of Hygiene and Tropical Medicine to carry out this investigation on behalf of the Board of Trade, and the results are shown in a report prepared by Major P. GRANVILLE EDGE, of the statistical department of the school.[4]

A very careful attempt has been made in this report to reach accurate figures for the population exposed to risk, and the mortality that should be related to it. As regards the former, it was the opinion of the subcommittee of the Permanent Consultative Committee on Official Statistics[5] that "a very imperfect picture of the mercantile marine would be obtained by a contemplation solely" of the figures obtained in the Board of Trade's annual census of seamen, since this record supplies not the total numbers of seamen, but only those actually in employment on a given date. This subcommittee concluded that the most satisfactory figure would be obtained by taking the figures relating to the occupation resulting from the decennial census of the general population, and adding to these the figures supplied by the Registrar-General of Shipping and Seamen of crews "at sea" on the night of the general census; these two sets of data would provide the total population of seamen. Unfortunately it was impossible in this report to adopt this procedure, since the figures relating to the general census of 1931 were not available. The use of the figures resulting only from the annual census must have the effect of over-stating the mortality ascribed to sea service, since the population relates only to the employed on a certain date, while the deaths refer to the employed and unemployed during the year. To overcome this difficulty, methods of estimating the true population exposed to risk are introduced in the report and discussed at length. As regards the deaths, the numerator of the death-rate fraction, copies of all entries relating to the deaths of seamen, reported during the year covered by the investigation, were specially supplied by the Registrars-General of England and Wales, Scotland, and Northern Ireland. To every death certificate was added special information as to the man's employment, the date when he last went to sea, as obtained from the various official registers and indexes of seamen; if the deceased could not be traced in these registers, a letter of inquiry was addressed to the next-of-kin, informants of death, hospital and other authorities. In the light of this information a considerable proportion—as much as 16 per cent.—of the total deaths was excluded from those submitted to analysis. The excluded cases represented those where the declared occupation of the deceased person at the time of death was that of "seaman," but the man's service had either been confined to fishing vessels, barges, or other craft whose populations would not have been included in the annual census of seamen, or they were men who, for other reasons—e.g., foreigners on foreign ships—were outside the scope of the inquiry. These are among the elaborate precautions that have been taken in the endeavour to reach a true occupational death-rate. In spite of them the results reached can only be regarded as tentative, and it is admitted that this report is unable to provide a definite and final settlement of the problems of the seaman's health. If the 3620 deaths, included in the year's analysis, are related to the population figure obtained at the Board of Trade's annual census, a death-rate of 18·6 per radiation which only just avoids a radium "burn." In this connexion it may be noted that an ingenious applicator for use in the rectum, which is illustrated in the report, has been devised by the Scottish Association of the Medical Women's Federation.

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[1] THE LANCET, 1930, i., 423; 1931, ii., 994.

[2] Ibid., 1929, i., 985.

[3] Ibid., 1926, ii., 816.

[4] Statistics Relating to Mortality in the Mercantile Marine. H.M. Stationery Office. 1932. Pp. 98. 1s. 6d.

[5] Statistics Relating to Health and Mortality in the Mercantile Marine. H.M. Stationery Office. 1926.

If attention is here drawn to the sections of this report detailing possible drawbacks to the use of radium, and to the lack of definite guidance in matters of dosage and technique, it is in order to emphasise the value of a correlating agency such as the Medical Research Council provides. The research centres under the Council now number 12, and the rapid development of radiotherapy is seen from the fact that the relative frequency of surgical and radiological treatment of cases of malignant disease presenting themselves at the ten centres supplying this information is about equal. Only by a critical examination of records and a tireless follow-up system, which takes count of morbidity as well as mortality, can the peculiar contribution of radium to medicine be applied to best advantage.

THE COLONIES IN BRIEF

FROM the time of inauguration of the Colonial Medical Research Committee in 1927, summaries of the reports of the medical departments of the various colonies, protectorates, and dependencies have been prepared for the use of officials. For the first three years the general information as to the health of the different territories was but briefly dealt with, the major part of the publication being devoted to the researches being carried on by officers of the Colonial Medical Service, together with an account of work on allied subjects by investigators of other nationalities. This was done with a view to keeping British workers abroad acquainted with the more recent advances in tropical research in various parts of the world, so that they might not waste time in repeating work already proved and accepted, and so that they might be saved the task of having to read for themselves papers often difficult of access and many of them in a foreign language. The last appearance of this work, printed for private circulation, was in 1930, when the Colonial Medical Research Committee was dissolved. Since then the issue of an annual supplement to the *Tropical Diseases Bulletin*, containing summaries of the full reports of the activities of the health departments, medical and sanitary, of the colonies, has been undertaken by the Bureau of Hygiene and Tropical Diseases, the actual task of preparing the summaries being in the hands of Dr. H. HAROLD SCOTT, the assistant director of the Bureau, who had previously been secretary of the Colonial Medical Research Committee. Two such supplements have now appeared, dealing with the annual reports for 1929 and 1930.[1]

For purposes of gathering together the vast amount of information contained in these annual reports they are dealt with in groups geographically—West African, East African, Mediterranean, Indian Ocean, the Far East, the Pacific Ocean, the West Atlantic, and South Atlantic—and the colonies, protectorates, and dependencies within each group are considered seriatim. The general plan, to facilitate reference and comparison, is to mention in order: vital statistics, maternity and child welfare, school hygiene, and general sanitation; under this last are included water-supply, conservancy measures, town planning, proposals for future work, and the like. Next follow clinical details giving accounts of hospital facilities, out-patient departments, dispensaries, urban and rural, with statistical and medical records of the chief diseases—e.g., malaria, dysentery, enteric, cholera, plague, leprosy, tuberculosis, yaws, venereal diseases, helminthic infestations, and so forth—and the measures for combating them. In each case, where possible, the figures in the returns for the previous year are given as affording an instructive comparison and an indication of progress or of the need for special investigation, study, and preventive measures. Lastly, summaries are given of the laboratory facilities and of the research carried out during the year, completed or in progress.

This collection of summaries is useful in several ways. First, they contain accounts of matters which are scattered through the larger reports, each extending perhaps to more than a hundred pages, but are here brought together so as to make a connected story and more interesting reading by revivifying the dry bones of the official records. Secondly, the vital statistical returns, giving the population as a whole and by race, the numbers of births, deaths, invalidings, and the causes of the latter, will be of undoubted value to actuaries and insurance officials at home and abroad who do a large amount of business in policies of insurance—life, health, and accident—amongst Europeans permanently resident in or temporarily visiting the colonies. Thirdly, they are a fruitful source of information to intending travellers abroad, telling them the commoner causes of ill-health in the districts they may be proposing to visit. Fourthly, they appeal to the research worker in that they refer to the many and varied investigations undertaken in the tropics, stating what is being attempted, what has been accomplished during the year, and the researches proposed for the immediate future. The more important of these, including matters of academic research, receive special individual notice in greater detail in the *Tropical Diseases Bulletin* or the *Bulletin of Hygiene* in the appropriate sections. Lastly—a point of no little significance—the issue of these supplements has already proved an encouragement to those working, often under trying conditions of climate and environment, sensible of loneliness, of the unavailingness of much of their efforts, or, what is even more galling, feeling that their work is not appreciated. For them to know that their official reports are not relegated to oblivion but are scanned, studied, abstracted, and widely published;

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[1] Trop. Dis. Bull., Suppl., 1931, xxviii., pp. 68. 2s. 6d.; ibid., Suppl., 1932, xxix., pp. 148. 2s. 6d.

it can be said with greater truth or force that his work is cited and utilised to an ever-increasing extent because of its value as an aid to understanding problems of symptomatology and pathogenesis in nervous disease. His decerebrate rigidity of the laboratory has become a bedside commonplace; his reciprocal innervation has illumined varieties of involuntary movement: his conception of integration has enabled the neurologist to correlate phenomena of disease whose significance otherwise would have remained obscure. SHERRINGTON's position is indeed unique, seeing that he has laid under indebtedness to himself for insight into clinical difficulties a host of workers whose field of activity does not correspond with his own. It is meet, therefore, that our premier neurophysiologist, ripe in years and knowledge, should receive from abroad that public tribute which does no more than echo what has long been thought of him in this country by all who know him or his work.

Prof. ADRIAN has followed somewhat similar lines of research, and his career has been one alike of fulfilment and of continuing promise. He has specially occupied himself with investigations on sensation and the sensory system, and long since won his spurs by many contributions of enduring merit. He has attracted numbers of younger men to work with him, so that the Cambridge school of neurophysiology bids fair to rival that at the sister university as a centre of the keenest activity in advancing physiological knowledge. Adrian has always shown a lively interest in clinical neurology and had the opportunity of prosecuting clinical research during the war. Thus it comes about that he also has been the maker of studies which have a direct bearing on problems of a clinical kind.

ANNOTATIONS

SOME BACTERIOLOGICAL PROBLEMS

THE Harben lectures which are given each year at the Royal Institute of Public Health do not get the audiences which their quality deserves, and we should have expected that more people would have welcomed the opportunity of hearing such a distinguished bacteriologist and hygienist as Prof. Max Neisser, of Frankfurt, when he came to talk out of his accumulated experience about new light on some of the old problems of his science. His name, at any rate, must be familiar to many thousands of medical students who have attempted, and sometimes achieved, his method of staining the diphtheria bacillus, for it is not only a useful procedure, but one which produces elegant and numerable microscopical preparations. In his first lecture Prof. Neisser dealt with the variation of bacteria and the possibility of the transmutations which have been so often described. We know now, he said, that bacteria are more variable than we used to think, and that the varieties of one species may show quite striking differences; we attach less importance to small aberrations from type, and we are more sure than ever that what may fairly be called a "species" has never been observed to change into another "species." Bacteria have not provided us, as was at one time anticipated, with the spectacle of evolution going on before our eyes, and the history of the claims to have seen it shows that sound bacteriology rests, now and always, on a rigorous technique.

This is the lesson also of the second lecture, in which Prof. Neisser discussed the acid-fast bacilli which resemble the tubercle bacillus. That similar looking, non-pathogenic bacteria were rather widely spread about the world has been known for a long time, but their prevalence and abundance has only recently been realised, and they are evidently more of a trap for the unwary or hasty bacteriologist than has generally been thought. The slime in the orifice of any metal water tap anywhere will show large numbers; they can easily be grown in pure culture and are quite harmless to animals. The nature of the water makes no great difference, and even chlorination does not kill them. Their bodies may obviously be found in any media made with tap water, just as microscopical preparations off gelatin media may show the bacteria which flourished in the putrefying bones of origin. The metal mouthpieces of wind instruments of music are also a favourite haunt of similar (probably the same) microbes, which presumably get there from the mouths of the players, whither they come from water. It is evident that anything looking like the tubercle bacillus which is found in an unlikely place needs thorough cultural and animal tests before its pathogenic character is assumed.

The favourable differential environment provided by metal taps for acid-fast bacilli leads on to the third discourse on the bactericidal effects of silver. These have been known since Naegeli's original systematisation of "oligodynamic" action, in 1893, in which he showed that extremely small concentrations of copper and other metals were poisonous to spirogyra and other lowly life. His supposition that chemical action was impossible and that some new destructive influence had to be invoked has proved unnecessary; it seems clear that a sixpence placed in the middle of an agar plate prevents bacteria growing in its neighbourhood, because traces of silver oxide and carbonate go into solution, and quantitative calculations show that it needs about 20 million silver ions to kill one colon bacillus. At the boundary of the area in which there is a killing or inhibitory concentration of silver, the growth of the organism is enhanced—an elegant illustration of the general rule that poisons, if they are weak enough, stimulate cell growth. This fact qualifies the possibilities of using silver on a large scale for cleaning water-supplies, though the technical difficulties appear to have been surmounted, and the quantities of silver necessary are far less than those which may be safely injected intravenously in man.

CRAFTSMANSHIP WITHOUT SIGHT

THE numbers of men who come under the care of St. Dunstan's have not yet begun to decrease: although there were 31 deaths during the past year, 33 new cases have been admitted, men whose sight has ultimately failed as a result of war service. Their training fits these men to take posts which at first sight would appear to be quite beyond the scope of the blind. Many become joiners, learning to handle their tools with precision, and producing finished articles which compare favourably with the work of

1000 is reached for all classes (British, Lascars, and foreigners), and 24·8 per 1000 for British seamen alone, the population used relating only to the employed on a given day. Using estimated populations the mortality-rate at ages 20 and over is given as 16·04 per 1000, as compared with 17·61 for males in all England and Wales in 1929; at ages 20–65 it is 9·87 per 1000, compared with 9·70 for all males; but crude rates such as these are, as Major Edge points out, of limited value as indications of the healthiness of the mercantile marine, for the age distribution of merchant seamen must differ very widely from that of the general population. As an alternative standard of comparison the statistics of the Royal Navy have been utilised, and the following reasonably comparative results have been deduced.

—	Mercantile marine. Population 162,656	127,518		Royal Navy. Population 86,240	
Cause of death.	No. of deaths.	Rate per 1000.	Rate per 1000.	No. of deaths.	Rate per 1000.
Disease ..	295	1·81	2·31	153	1·77
Injury ..	109	0·67	0 85	49	0·57
Drowning ..	205	1·26	1·61	42	0·49
Suicides ..	31	0·19	0·24	9	0·10
All causes ..	642	3·95	5·04	254	2·94

But merchant seamen have not continuous service, and any dying when unemployed are, technically, "retired" and are not shown in the above figures, a point made by Fleet-Surgeon Home in an article on the Report which appears in this issue (p. 1020).

Two estimated populations, it will be seen, have been used in computing the rates for the mercantile marine. The lower must err in the direction of over-statement of the death-rates, the larger errs in the direction of under-statement. From these rates Major Edge concludes that "bearing in mind the widely differing conditions of service characterising employment in the Navy and mercantile marine respectively, the higher mortality-rates due to 'All Causes' and to 'Disease' in the latter are not excessive, nor are they higher than might have been anticipated." Further consideration of the *causes* of death in the mercantile marine has been made by means of the method of proportionate mortality—i.e., the proportion of deaths that particular causes contribute to the total mortality. The method has serious drawbacks, but in the absence of accurate population statistics it is probably the best that can be adopted. In this way seamen have been compared with those following shore occupations in which a high standard of physical fitness on the part of the workers employed is demanded—e.g., coal-miners, agricultural labourers, dock labourers. In 1930 for the very first time, the deaths in the merchant service by injury, 316, were fewer than those by disease, 370, and the report generally is a careful and valuable attempt to reach conclusions regarding the peculiar problems of the health of the merchant seamen. It has certainly taken us a step further in solving those problems, and it has shown clearly the intricate technical difficulties involved. It makes no pretensions to be complete; in fact, Major Edge urges that the whole scope of the inquiry must be widened if dependable conclusions are ever to be reached. The census figures of 1931 will assist in removing some of the conjectures that have at present to be made with regard to the population exposed to risk; data relating to a longer period of time than a single year will place the mortality figures on a more secure basis. Major Edge says: "So far as can be ascertained, no maritime nation has ever yet engaged in an extended and searching inquiry into the mortality of her merchant seamen. The mercantile marine represents our most important commercial undertaking and, as the leading maritime nation of the world, we should lead the way in this field of work." It is gratifying to find this attitude replacing what we have hitherto regarded as a lack of attention to the important problems of the seaman's health. We trust that this inquiry will be the precursor to the comprehensive investigation that Major Edge envisages.

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NOBEL PRIZEMEN

The announcement by the Royal Caroline Medico-Surgical Institute in Stockholm that the Nobel Prize for 1932 in medicine and physiology has been awarded jointly to two English physiologists—Sir Charles Sherrington and Prof. E. D. Adrian—will be received with pleasure and gratification by very many scientists and professional men outside the narrower circle that is thus directly honoured.

Forty years ago Sherrington's name was already known as that of one who had made his mark by contributions to the physiology of the nervous system, and successive decades have witnessed a rich output of studies that have seemed to delve ever farther into the mysteries of neural action. Highly technical though they have nearly always been—for Sherrington has never assumed the rôle of a popular expositor of physiological complexities, nor cared one iota for the physiology-made-easy of some of his contemporaries—it is a remarkable tribute to his genius and personality that no one has ever wished it otherwise. Those who have sat at his feet, at Oxford and elsewhere, have sought to emulate his level of accomplishment, and have endeavoured to imbue themselves with his spirit of research. His classical work, "The Integrative Action of the Nervous System," published in 1906, takes some reading, and those who have mastered its closing chapter on sensual fusion and binocular flicker, have reason to congratulate themselves on the achievement. That Sherrington has laboured for a lifetime at neurophysiological problems without paying much specific attention to the clinical applications of his discoveries and advances is another remarkable feature of the man; disclaiming all acquaintance with clinical neurology, he has been content to carry the torch of pure science. And yet there is no one to-day of whom organs. It is necessary to protect the whole body against these gases, and those treating victims are handicapped by the necessity of protecting themselves against the residue of the gas on the skin and clothing. It is very dangerous to treat these cases in a confined space or to bring their clothes indoors. If taken in time, mustard gas can be quickly washed off with bleaching-powder solution, soft soap, peroxide of hydrogen, or permanganate of potash. but if left in place it is steadily absorbed.

While it is possible to organise effective protection against all poison gases at present generally known, the efficacy of the measures depends entirely upon the knowledge of the leaders and the discipline of the population for whom they are responsible. Organisation of the civil population in Germany, according to a paper appearing elsewhere,[2] is achieved through three main groups the "Technische Nothilfe," the Red Cross sanitary columns, and the corps of fire engineers. The first of these is used to assist industrial enterprises overcome by fire or flood, and gives practical and theoretical instruction to their personnel. The Red Cross columns number over 3000 and include over a quarter of a million members; they are familiar with poison gas dangers because of the great extent of the chemical industry in Germany. The fire engineers are a highly trained and versatile organisation plentifully supplied with apparatus. A large number of firms manufacture gas masks and are striving to improve their models; advances are being made in the use of changeable filters to protect against different kinds of gas. Notice of the approach of aircraft is said to be closely organised over the whole of the Reich, and every centre of population should in practice receive ample warning. The production of artificial cloud screens, for protection and for warning alike, is being studied. Popular education is carried out by the Deutsche Luftschutz-Liga, which unites the efforts of the technicians and the civil population. Every citizen may be a member for a small yearly subscription. Several periodicals exist dealing exclusively with protection against aero-chemical attack, and last year the Auer Society held an instructive demonstration in Bremen, in which many voluntary bodies took part.

TUBERCULOUS BACILLURIA

THE question as to whether tubercle bacilli can be excreted by a normal kidney is clearly one of practical importance. It was at one time assumed that the appearance of tubercle bacilli in the kidney urine was of similar significance to their demonstration in the sputum in proving disease of the corresponding organ; but the number of cases recorded in which a kidney was removed in which no characteristic tuberculous lesions could be found threw doubt on the theory. It was then argued by some observers that the normal kidney must be permeable to tubercle bacilli circulating in the blood stream, although the experiments of W. Wyssokowitsch, C. v. Klecki, and J. Koch [3] [4] [5] had shown that the rapid disappearance of injected tubercle bacilli from the circulation which occurs is effected primarily by their lodgment and destruction in the spleen, liver, lungs, and bone-marrow, and not by their excretion by the kidney. Others concluded that the organisms could only pass through a kidney already damaged by chemical or other trauma, and others again that tubercle bacilli could produce non-specific inflammatory changes in the kidney (tuberculous nephritis). It was widely held that removal of such an organ was contra-indicated, although excretion of the organisms might subsequently lead to their attacking the parenchyma of the kidney. The process of excretion without recognisable lesion was known as Ausscheidungstuberculose ("excretion tuberculosis"). F. Lieberthal and T. von Huth [6] have recently reviewed the experimental literature which is principally concerned with the demonstration of tuberculous changes and presence of the organisms in the kidney tissues rather than with their appearance in the urine, and have contributed an experimental study of this latter aspect of the problem. They injected suspensions of tubercle bacilli into the ear vein or left ventricle of female rabbits, giving in some cases intravenous glucose or subcutaneous saline to promote diuresis. The total urine excreted was collected over 24-hour periods, and the animals were killed after a varying number of days. Each urine specimen was examined for tubercle bacilli in the direct smear, and by culturing according to the Loewenstein-Sumyoshi method on Hohn's egg medium. In certain of the animals cantharidin nephrosis, uranium nephritis, and mercurial nephrosis of varying severity was induced before the injection of bacilli was carried out. A careful post-mortem examination of the kidneys was made in each case for tuberculous and non-tuberculous renal damage, and for the presence of organisms. The authors conclude, from the correlation of their own and previous histological and urinary findings, that a physiological excretion of tubercle bacilli by the normal kidney does not occur, nor do they believe in the existence of either the so-called tuberculous nephritis or of true excretion tuberculosis—i.e., organisms being excreted by the kidney then attacking its substance. However, a "false" excretion tuberculosis, in which spread of an interstitial tuberculous lesion through the wall of a tubule or glomerulus, resulting in the appearance of tubercle bacilli in the tubules and subsequent infection by them of other parts of the kidney, may in their view occur (though rarely). In their experiments the production of non-tuberculous renal damage before the injection of tubercle bacilli did not render the kidney permeable to the organisms, but as in P. Baumgarten's [7] experiments with ligation of the ureter, such damage appeared to favour the development of true renal tuberculosis. In common with previous workers, the authors find that the kidney shows a striking immunity to the presence of tubercle bacilli in the blood stream, which they attribute to its copious blood-supply and the large calibre of its vessels and conclude that infection, when it occurs from this route, is due to local disturbance of the circulation or the presence of tubercle bacilli in masses sufficiently large to result in embolism—e.g., when suspended in fat droplets or adherent to debris. The fact remains that when, in opposition to orthodox surgical views in this country, one of two kidneys, both excreting tubercle bacilli, has been removed, the patient's condition has occasionally improved to an astonishing degree. The criterion of infection in certain continental clinics has been the excretion of pus as well as tubercle bacilli, and when pus and tubercle bacilli are excreted from one ureter, and bacilli alone from the other, the former is removed, every effort men in possession of their sight. When training is complete St. Dunstan's takes the responsibility of setting up the blind worker in his own workshop, and a technical instructor visits him at intervals to advise on his work and recommend improvements. Blind craftsmen become ingenious at circumventing their disability; one man, having made a standard lamp, and being unable to direct a drill, split the stem of the lamp from end to end, cut a groove to hold the flex, and joined the halves again. A certain number of men take up massage and find that confidence in their skill is quickly acquired by patients; an expert from St. Dunstan's helps the masseur to keep his apparatus in perfect condition, and gains the coöperation of local doctors and hospitals in finding work for him. Other men become switchboard operators employed by large firms with many incoming calls; a specially constructed switchboard is necessary of course. These operators become highly skilled, and several firms have found the work performed more efficiently by a St. Dunstan's man than by an operator in possession of his sight. Poultry farming, boot-repairing, and basket-making are among other forms of work taken up by patients of St. Dunstan's. Those who had received little education before the war are taught English, composition, and grammar, as well as Braille reading and writing. Organised sports hold an important place in training, the men taking up rowing, swimming, shooting at goal, road-walking, and even skating. The patients take part at dances, to the music of a band composed of St. Dunstan's men.

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[2] Bruxelles Méd., Oct. 16th, p. 1663, and Oct. 23rd, p. 1703.

[3] Ztschr. f. Hyg. u. Infectionskr., 1886, i., 3.

[4] Arch. f. exper. Path. u. Pharm., 1897, xxxix., 173.

[5] Ztschr. f. Hyg. u. Infectionskr., 1908, lxi., 301.

[6] Surg., Gyn., and Obst., October, 1932, p. 440.

[7] Ztschr. f. klin. Med., 1885, x., 24.

AMBULATORY TREATMENT OF LEG FRACTURES

THE unpadded plaster cast is at present enjoying a period of great popularity among orthopædic surgeons. A traction apparatus for fixation of the leg during the application of a plaster cast for fractures of the tibia and fibula has been designed by Mr. R. Watson Jones, and was recently described by him at a meeting of the British Orthopædic Association.[1] The apparatus can be readily transported, and fixed at will to any firm table; it seems both simple and efficient. The apparatus consists of a thigh support, an L-shaped traction bar, and a clamp by which these two parts can be fixed to the table edge. The thigh lies on its support, with the leg hanging vertically over the end of the table. Traction is maintained by means of a pin driven through the os calcis, and a stirrup which hooks to the horizontal limb of the traction bar. Coarse and fine adjustments allow the correct degree of extension to be applied, and the limb is held firmly in position while it is encased in plaster from the knee to the base of the toes. A sorbot rubber heel is incorporated. Angulation is corrected during the application of the plaster by pressure of the operator's hands. The pin is withdrawn from the os calcis immediately the plaster is firm and the plaster continued to the upper thigh; the patient is allowed to walk from the second or third week. In compound fractures weight-bearing is commenced when the wound is dry. The technique Mr. Watson Jones uses for infected fractures is essentially the closed method of treatment described by Winnett Orr. Recurrent œdema is controlled by support of the leg by a "viscopaste" bandage, without massage.

Objections which have been made to the use of plaster-of-Paris in the immediate treatment of fractures of the lower limb have been based either on lack of faith in the plaster to prevent recoil of the fractured ends within the cast, or on fear of the trophic disturbances that might occur through interference with the circulation, or through blistering of the skin under the plaster. A certain amount of recoil does apparently occur in the method here described when the extension on the stirrup is released; in one case this was sufficient to cause a pressure sore on the dorsum of the foot. No case is, however, recorded in which overlapping of the fragments of the bones subsequently occurred. In fact, this pressure sore on the foot was the only complication met with in over 100 cases treated. A window is now cut in the plaster over the dorsum of the foot to prevent pressure on this area of skin. Swelling of the limb and blistering of the skin Mr. Watson Jones considers to be directly due to lack of support; he argues that the objection on this score to the employment of the skin-tight plaster is fallacious, as the plaster acts as an efficient external splint. He has met with no case of impairment of the circulation sufficient to warrant removal of the plaster. Several reproductions are given of X ray photographs showing the excellent immediate reduction obtained by the method. There seems no doubt in Mr. Watson Jones's mind of the great importance of early weight-bearing. Other surgeons are obtaining good results, both as regards alignment and rapidity of union, by treating the patients in bed.

PROTECTION AGAINST POISON GAS

IT is a commonplace to foretell that in any future war determined attempts will be made to intimidate civilian populations by the gas bombardment of cities by aircraft and artillery. The Government of East Prussia, which is entirely surrounded by potential enemies, regard this danger as a very real one, and the Königsberg Association for Scientific Therapy recently held a conference of medical and technical experts[1] which was attended by large numbers of medical men who wanted to prepare themselves to organise the civil population against possible gas bombardment. They learned that the gaseous products of high explosive shell, being lighter than air, are not very dangerous, and that the "blue cross" group—lacrymatory and sneezing gases—are dangerous only when they compel the victim to take off his gas-mask in the presence of deadly vapours. The "green cross" group includes compounds which irritate the lungs, such as chlorine, phosgene, and chlorpicrin; these can be combated by ordinary gas-masks, but if they are inhaled they cause acute œdema of the lungs and air-hunger, with a grave secondary danger of damage to the heart. For this reason artificial respiration is contra-indicated, and the best methods of first aid are venesection and the inhalation of oxygen. The serum lost from the blood should be replaced with saline, and the heart stimulated with strophanthin and glucose. The "yellow cross" or mustard gases, which are composed of dichlorethylsulphide, are by far the deadliest. They are actually fluids, but are atomised by explosion and hang about in thick clouds for a long time, forming a film on solid objects and impregnating clothing. The vapour is almost imperceptible at first, but after an hour or two it exerts a severe caustic effect on the skin and mucous membranes, with consequences that are often disastrous. Apart from its direct effect on the epidermis, eyes, and lungs, it is absorbed by the blood, and causes hæmorrhages in the brain, kidneys, and internal work. In his remarks on the nature of these viruses he still shows disinclination to accept the view that they are probably micro-organisms; in fact, he issues a warning against the too ready acceptance of presumptive evidence. An open mind is an invaluable asset in research, but in the case of such viruses as vaccinia, fowl-pox, psittacosis, and ectromelia, the recently acquired evidence points strongly to their micro-organismal nature. Any other view of them seems, at present, to require assumptions for which there is no warrant.

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[1] Jour. Bone Joint Surg., 1932, xiv., 591.

[1] Deut. med. Woch., Oct. 4th, p. 1629.

THORIUM IN RADIOGRAPHY

THE day when the scope of radiography was limited by the natural opacity of the organs is long since past, and now almost every year sees the discovery of some new method by which another organ may be rendered artificially impervious to the rays. In the last two or three years experimental work has been done in Germany and elsewhere on the use of thorium salts to render the liver and spleen more opaque to X rays. The method by which colloidal thorium renders visible the liver and spleen is shortly as follows. Colloidal thorium, like any colloidal suspension, is rapidly stored in the reticulo-endothelial system of the organism, and as it is not penetrable by X rays will therefore give a shadow of the organs in which it is stored. The mammalian liver and spleen, being very rich in reticulo-endothelial cells are thus outlined in the X ray picture. To the observations already noted in our columns[1] may be added others that have since been published. Fischetti[2] has found it possible to visualise the placentæ of the rabbit and guinea-pig with intravenous injections of Thorotrast (colloidal thorium dioxide). In the rabbit quantities of the salt far in excess of those required to show up the liver and spleen were required, and the animals died soon after their administration. In guinea-pigs the placental image was clearly photographed, the shadow first becoming apparent a quarter of an hour after the injection and being most intense three-quarters of an hour afterwards, then gradually lessening and finally disappearing at the end of 24 hours; all the lobes of the placenta were clearly delineated, and in one photograph the maternal vessels could be seen entering and leaving the organ. The liver and spleen also were rendered opaque to the X rays, but the time relations of these opacities were different, since they did not appear till four hours after the injection and persisted for some days. These differences are explained by the fixation of the opaque colloidal salt Histological examination of the viscera post mortem shows the reticulo-endothelial cells of the liver and spleen to be full of thorium granules. The reticulo-endothelial cells of the placenta, though by no means negligible in number, contain but few granules of thorium, and it thus appears that the placental shadow is largely the result of the great vascularity of the organ and the concentration of the salt in the blood plasma. Other histological findings suggest that the thorium does not pass the placental barrier and does not reach the fœtal tissues, but the results are of no clinical significance at present since they are obtained only at the cost of the animal's life.

R. Gottlieb[3] in Canada has used thorium clinically with success for delineation of the liver and spleen and of the pulmonary arterial tree. The dose necessary is minute compared with those required to produce a placental shadow in animals. Thorotrast was given in doses up to 25 c.cm. to 12 patients, most of whom were suffering from incurable diseases, and in several of whom death was imminent before the injection, and also to two normal persons. There was a complete absence of any immediate untoward effect, and although death occurred in six cases within a few days or weeks, it could not be attributed to the injection. Subsequent observations over a period of eight months have not shown any pathological changes in the organs in which thorium was deposited, in spite of slow elimination.

CHLOROFORM CAPSULES

THE offer of the National Birthday Trust to supply chloroform capsules for trial by medical practitioners on women in labour should not be ignored. The public demand for alleviation of the pains of normal labour is growing, and this device is the most promising attempt we have yet had brought to our notice to provide an analgesic suitable for use by the midwife in the absence of the doctor. Doubts have been expressed on the one hand whether the concentration of chloroform might not reach dangerous limits, and on the other whether the quantity (20 minims) supplied in each capsule can do more than act as a placebo. The only way to settle these questions is to make observations on a number of cases under widely differing conditions, and no better means of obtaining information could have been suggested than the enlistment of the coöperation of hospitals and practitioners.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, Nov. 22nd, when the President, Sir Norman Walker, will take the chair and give an address.

AT a meeting of the Pharmaceutical Society of Great Britain, to be held at the Society's house, 17, Bloomsbury-square, London, W.C., at 8.30 P.M., on Tuesday, Nov. 8th, Dr. C. H. Hampshire, secretary of the Pharmacopœia Commission, will speak on the British Pharmacopœia, 1932.

Sir Bernard Mallet, who died on Oct. 28th at the age of 73, was Registrar-General for England and Wales from 1909–20. These were years in which vital statistics became of pressing national interest, and Mallet's grasp of economic theory enabled him to apply his figures to political and social conditions of the time. After his retirement from the Central Statistical Bureau he became president of the Eugenics Society.

Dr. William McLean, who is leaving England this week to become head of the Jerusalem Hospital of the Church Mission to Jews, has accepted the Royal Geographical Society's invitation to join the Mount Everest expedition next spring. He is 33 years of age, and was educated at Repton, King's College, Cambridge, and St. Thomas's Hospital. Before taking up general practice in London he was for some time the resident medical officer of St. Thomas's Home. It will be recalled that the medical member of the Everest expeditions of 1922 and 1924 was Mr. Howard Somervell, F.R.C.S., now surgeon to the London Mission Hospital at Neyyoor, Travancore.

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[1] THE LANCET, Sept. 3rd, p. 530.

[2] Il Morgagni, Oct. 2nd, p. 1268.

[3] Canad. Med. Assoc. Jour., October, 1932, p. 356.

being made by heliotherapy and suitable diet to raise the patient's general resistance. Whatever the pathology involved, that success has attended such drastic measures is certain.

DANGEROUS DRUGS AND THE ECONOMIC CRISIS

As foreshadowed in our issue of Sept. 17th (p. 640) the traffic in opium and other dangerous drugs came under review by the Council and the Assembly of the League of Nations at their recent sessions. The report of the Permanent Central Opium Board for the year 1931 was discussed by the Council on Sept. 23rd. It expressed regret that under the stress of economy it had omitted its April session, and thus, to some extent, was precluded from keeping that "continuous watch of international trade" which it was instructed to observe. Attention had been given to the additional work which will fall upon the Board in the event of the Limitation Convention of 1931 receiving ratification and coming into force. Certain gaps in the Convention of 1925 will, it is hoped, be filled up under the provisions of the later treaty. Regret is expressed that many countries have failed to furnish statistics as to dangerous drugs produced, imported, or remaining in stock, or as to the seizures of illicit consignments during 1931; such default in international obligations is regarded as "a matter of grave concern." The Board concludes from the statistics vouchsafed that there has been a continuous decrease in the total world manufacture of morphine, heroin, and cocaine since 1929. It has, however, to be remembered that no returns have been received from Turkey or the Union of Soviet Socialist Republics, which are large producers of some of the drugs in question. The total present world requirements of these drugs for legitimate medical and scientific purposes was, it will be remembered, estimated by the Limitation Conference to be 9 tons of morphine, 2 tons of heroin, and 5½ tons of cocaine. In Great Britain there has been a considerable decrease in the manufacture of morphine and heroin during the last three years, and some increase in the production of cocaine. As regards consumption in Great Britain, morphine appears to be largely replacing that of opium. Seizures of illicit drugs in the case of morphine, heroin, cocaine, and Indian hemp show a diminution in 1931, but the Board reports that these figures afford "no true indication of the extent of the illicit traffic," while the seizures of raw opium "rose from 1279 kilograms in 1930 to no less than 10,166 kilograms in 1931." The conclusion is fully justified that "the quantities of narcotic drugs manufactured are still vastly in excess of those needed for medical and scientific requirements."

The fifth committee of the League also reported to the Council and the Assembly and expressed concern that no more than six States had, up till Oct. 11th, ratified or adhered to the Limitation Convention of 1931, and urged the dilatory States to proceed to immediate ratification. Reference was made to the Bangkok conference and the objection of the Chinese to the Government monopoly system in the Far East. It would appear that the provision of the Hague Opium Convention of 20 years ago, which contemplated the total suppression of opium-smoking, will long remain unrealised. The advisory committee was reported to be making preparation for the projected conference on limitation of the cultivation of the opium poppy and the coca leaf. The Indian delegate reiterated the view that the *non-medical* use of opium should be deemed legitimate, and a similar plea for the like use of the coca leaf was voiced from Bolivia. The fifth committee concluded with the rather surprising claim that "the opium conventions are more universally applied than any of the other conventions negotiated through the League." Faced with the illicit traffic which is admittedly "still so large," they insist that despite the economic crisis "any faltering might aggravate that very crisis."

UNIVERSITY OF DURHAM: THE NEWCASTLE COLLEGE OF MEDICINE

THAT there is great discontent in the Newcastle College of Medicine has been for some time an open secret, and the move to dispense with the services of Prof. H. J. Hutchens, Heath professor of bacteriology and pathology, in very debatable circumstances, brought some of the questions at issue to the brink of legal proceedings. These were, however, stayed on the understanding that the administration of the College should be submitted to inquiry, and the facts were laid before the Chancellor, Lord Londonderry, in June last. On Oct. 28th the Governors of the College met to consider a letter from the Chancellor, in which he stated that in his opinion an independent inquiry should be instituted, and he asked for the assistance and coöperation of the Council of the College of Medicine in the course which he decided should be taken. A resolution was passed, by 53 votes to 28 against, in favour of an inquiry to deal with the whole field of the administration and constitution of the College, the College defraying the costs.

FILTRABLE VIRUSES AND DISEASE OF THE NERVOUS SYSTEM

POSSIBLY in no field of microbiological research is coöperation between clinician, pathologist, and laboratory investigator more essential than in the case of the filtrable viruses. This is not difficult to understand, for the size of the filtrable viruses is such that direct observation of them is either impossible or of limited assistance only; the changes produced by them in the host's tissues must, of necessity, be our principal source of information. In a recent paper T. M. Rivers[1] lays stress on the interest which this group of viruses has for the neurologist and neuropathologist. Quite apart from such conditions as acute anterior poliomyelitis and epidemic encephalitis, there is the added importance of rabies virus for human pathology as evidenced by recent occurrences in Trinidad and elsewhere,[2] and that important and elusive problem of post-infection encephalitis. This last condition, which incidentally can occur without any preceding infection, appears to be linked up with conditions such as disseminated sclerosis and Schilder's disease, since the histological picture presented by the central nervous system in all these diseases has a common feature—demyelinisation. Thus the elucidation of the ætiology of any of the forms of post-infection encephalitis might conceivably supply the key to the whole group and bring a rapid advance in our knowledge of these conditions. Rivers has no new light to throw on this problem, his object is rather to review the situation and clarify ideas as a prelude to further

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[1] Arch. Neurol. and Psych., 1932, xxviii., 757.

[2] Hurst, E. W., and Pawan, J. L.: THE LANCET, 1931, ii., 622; Jour. Path. and Bact., 1932, xxxv., 307.

Treatment.—There is no one treatment which is efficient in puerperal sepsis, but in recent years one striking fact stands out, that patients with this condition do infinitely better in an institution where they can be properly nursed and properly fed, and where treatment (such as it is) can be applied. The different results in patients nursed under these conditions and in their own homes are most noteworthy. Surgical treatment, whether it be hysterectomy, removal or tying of the ovarian veins, only adds one more strain with which the patient has to struggle. The intravenous and intramuscular injection of antiseptics is equally valueless. The least dangerous is flavine, 1 in 1000. Quinine by mouth and intramuscular injection has on the whole been disappointing. Vaccines and sera have not given the results one might expect. There is no doubt that blood transfusion and immuno-transfusion do help the patient and raise her powers of resistance. Irrigation of the uterine cavity has from time immemorial been carried out by antiseptic douches, a procedure fraught with more danger than assistance to the patient. Of late years irrigation of the uterine cavity with sterile glycerin has been used for these patients, and in many cases undoubtedly has borne good results. It requires to be done with care lest a fresh supply of organisms is carried into the uterine cavity during the manipulation.

STAPHYLOCOCCAL INFECTION

(DR. P. N. PANTON)

UNTIL about four years ago, and during the previous decade, staphylococcal infections had ceased to excite particular interest, and some of the known facts concerning them were beginning to be lost sight of. Staphylococci are said to produce an intracellular toxin, as distinct from an extracellular toxin such as that produced by the diphtheria bacillus; but the hæmolytic and leucocidal actions of the staphylococcal toxin have been recognised for many years. Four years ago the Bundaberg catastrophe occurred, in which, owing to contamination of a diphtheria toxin-antitoxin mixture with staphylococci, a number of children lost their lives after inoculation against diphtheria; at the time it was thought to be remarkable that staphylococci should be so lethal.

Staphylococci may be, and often are, carried on the skin of people who show no symptoms themselves, but it is doubtful whether virulent strains are ever carried in this way. The carrier may be responsible for outbreaks of infection in others.

In one case the carrier was a nursemaid who had been suffering from styes. She entered a family where there were two children, one of whom shortly afterwards developed a stye and the other a skin abscess. The maid went away for several months and the children recovered; but when she returned, although she was entirely free from symptoms, there was a fresh outbreak of infection in the children. The conjunctival sac of the nursemaid was found to give cultures of a fairly virulent strain of *Staphylococcus aureus.*

Where children develop staphylococcal infections it is always worth while looking round the household for a carrier.

Once an infection has been incurred, subsequent attacks are common. A carbuncle may be followed by an outbreak of boils in the same patient which may persist for months. Animal experiments throw some light on this susceptibility to fresh infection. An area of a rabbit's skin is shaved and a dose of staphylococcal culture, sufficient to produce a spreading lesion, is injected intradermally. At the same time one-tenth of the dose is injected a short distance away, and one-hundredth and one-thousandth of the dose at other neighbouring sites. One-tenth of the dose will probably produce a small lesion, and one-hundredth and one-thousandth none at all. If the lesions are allowed to heal and the whole process is gone through again several times there comes an occasion, after the third or fourth repetition, when the original dose will produce only a small lesion; one-tenth of the dose will also produce a small lesion, but one-hundredth and one-thousandth of the dose, instead of producing no lesions at all, now give rise to lesions similar to that produced by the full dose. In short, the animal has become partially immunised to the infection, but it has also become susceptible to a much smaller dose. This hypersensitive state is the basis of all recurrent staphylococcal infections. We know of no means to break it—the patient often remains hypersensitive for years. Unfortunately, we can induce it, for example, by overtreatment with vaccines.

If staphylococci are grown on an agar slope for 24 to 48 hours in a partial atmosphere of carbon dioxide, and if the culture, after grinding up the agar, is then filtered, the filtrate is found to be toxic. A fraction of 1 c.cm. injected into the ear-vein of a rabbit causes death almost instantaneously. The toxins which have been isolated have four actions, being lethal, necrosing, hæmolytic, and leucocidal. The lethal toxin is the one responsible for the death of a rabbit when injected in the way described; probably it does not play much part in human pathology. The necrosing toxin has a local action on the skin, and doubtless takes part in the production of local lesions in the human subject. The hæmolysin of staphylococci differs from that produced by hæmolytic streptococci in that it has a very slight effect on human red cells, and only causes lysis of the red cells of certain animals. It is doubtful whether it plays any part in human pathology, but as its content varies with that of the necrosing toxin, and is more easily estimated, it is useful as a measure of the amount of necrosing toxin present. Leucocidin attacks only the phagocytes, throwing them into clumps which are visible to the naked eye. Such tangled masses of phagocytes are probably responsible for pyæmic emboli.

Different strains of staphylococci produce these toxins in varying proportions. Very generally speaking virulent pyæmic cases and cases of carbuncle with spreading infection are due to strains which produce a high content of leucocidin and a low content of hæmolysin. Boils arise from strains with high leucocidin and high hæmolysin, and sycosis from strains with low leucocidin and high hæmolysin. A fourth group of non-pathogenic strains which are largely saprophytic have low leucocidin and low hæmolysin.

This variation in the proportion of the different toxins has a considerable bearing on specific therapy. An autogenous vaccine will have little effect if it is made from a strain with low leucocidin and hæmolysin, whereas a stock vaccine made from a strain with high leucocidin and hæmolysin may work wonders. When a stock vaccine is used it is therefore important to find out what strain of staphylococcus was employed in its preparation. Another method of treatment which deserves trial is immunisation with toxoid. If a small dose of staphylococcal toxin is injected intradermally a wheal will nearly always appear if the patient is adult; children and some young adults may give a negative result, and so will a patient moribund from pyæmia. In other words, sensitive patients react, whereas insensitive or

POINTS IN THE PRACTICE OF GYNÆCOLOGY AND OBSTETRICS

(MR. W. GILLIATT)

IRREGULAR HÆMORRHAGE

It is important to discover the cause of any irregular hæmorrhage at or about the age of 40. Abdominal and vaginal examination should always be carried out in such cases, and in making a pelvic examination it is useful to place the index-finger in the vagina and the middle finger in the rectum. Doubtful cases should be examined under an anæsthetic, and curettage is often of value in establishing the diagnosis. At 40, pregnancy is not excluded, but is rare; myoma is a common cause of irregular bleeding, but other innocent tumours which may cause this symptom are adenomatous polyps and adenomyomata. Infective causes are chronic endometritis and chronic metritis, but in chronic metritis the loss is not as a rule irregular. A malignant tumour may be responsible, such as carcinoma of the uterine body, the cervix, tube or ovary, or, rarely, of the vagina or vulva. In a large number of cases no causal factor will be found; but not until other causes have been excluded by examination is it justifiable to call the condition menopausal.

The diagnosis of *pregnancy* can now be established early by means of the Aschheim-Zondek test. During pregnancy an anterior pituitary hormone is secreted in the urine; urine containing this hormone produces signs of œstrus when injected into immature female mice, and the test is positive within 14 days of the first missed period. The test is especially useful where pregnancy is complicated by fibroids or where ectopic gestation has occurred.

Carcinoma of the cervix is one of the most fatal conditions in gynæcology, the average duration of life in untreated patients being 20 months. Hypertrophic and ulcerative forms are recognised, and the hypertrophic form may be of the cauliflower or, more rarely, of the mushroom type. The diagnosis of both forms can be made on the friability of the tumour, parts of which break away beneath the examining finger. The condition has to be distinguished from erosion, chancre, ulcer due to a pessary, and ectropion. In doubtful cases an anæsthetic should be given, a portion resected, and microscopical examination carried out. Carcinoma of the cervix is rare in nulliparæ, and has been called the price of child-bearing; it is also more common among women of the poorer classes than among the well-to-do, possibly because women in poor circumstances have less time to spare for the investigation of discharges and because, perhaps, they pay less attention to cleanliness. The condition is commonest at the age of 42, but cases have been recorded at all ages from 22 onwards.

Treatment is either by operation, which is only suitable in early cases, or by radium, which is suitable for all cases. Wertheim's operation, as performed in this country, gives a survival rate of 40 per cent. after five years, but it is a severe operation, and has an operative mortality of 8 to 15 per cent. Radium has not been used on any fixed plan in this country, but workers in Stockholm have found that treatment with radium gives a survival rate of 38 per cent. after five years; any type of carcinoma of the cervix can be treated in this way and it is not a severe undertaking. There is a small operative mortality—perhaps 5 per cent.—due to the occasional development of pelvic peritonitis or to a reaction so marked that further treatment becomes impossible. The results of radium treatment of carcinoma of the body of the uterus are discouraging, but fortunately the results of operation in this condition are good. Radium can also be used to induce an artificial menopause, for example, in chronic metritis.

PUERPERAL SEPSIS

Puerperal sepsis may arise either by endogenous or exogenous infection, but it is a good rule never to blame the patient as the source of infection when one can blame one's self. *Exogenous infection* is commoner, more important, and more deadly than autogenous infection. Puerperal sepsis may arise by transfer of infection from patient to patient, but this is almost a thing of the past. It may have its origin in organisms from the throat or nose of the attendants, and for this reason masks ought to be worn as a routine measure throughout the confinement. The incidence of sepsis also depends to a large extent upon internal manipulations and the duration of labour; prolonged labour exhausts the patient and consequently lowers her resistance by diminishing the bactericidal power of the blood. Lacerations also favour sepsis, and 40 per cent. of cases in which manual removal of the placenta is performed show a rise of temperature afterwards. Induction of labour probably encourages infection more than is imagined, and patients with toxæmia are more liable to develop sepsis than others. Exploration of the uterus in a woman showing slight signs of infection should never be carried out unless there is hæmorrhage, and then only with the gloved finger. If the patient has a raised temperature and an offensive discharge exploration is definitely dangerous. Hæmorrhage in labour is another predisposing cause. It is a condition that practitioners are often called upon to treat, and blood transfusion is one of the most valuable methods of restoring the strength of the patient and enabling her to resist infection.

Autogenous infection may occur in the following ways. Hæmolytic streptococci have been found in the vagina in 2 to 3 per cent., non-hæmolytic in 1 to 2 per cent., and anaerobic streptococci in 1 per cent. of normal healthy pregnant women, who do not necessarily develop sepsis. These organisms get into the vagina possibly in old cases of gonococcal infection, in previous cervical tears associated with cervicitis, and as a result of sexual intercourse late in pregnancy. *B. coli* may invade the pelvic organs from the intestinal or urinary tract. And again, lowered resistance may allow organisms in other places to develop increased virulence, and passing through the blood stream reach the uterine cavity—e.g., severe oral sepsis.

The following remarks refer to cases of puerperal septicæmia only.

Organisms.—In addition to the streptococci mentioned above, puerperal septicæmia may be due to *B. coli* and *Staphylococcus aureus.* The most common of these is the hæmolytic streptococcus and, in addition, it is the most deadly. The staphylococcus is the rarest, but fatal cases have been recorded.

Prognosis.—The only sure guide to the severity of the condition and the patient's chances is the pulse-rate. The mortality increases the higher the rate. Under 100 the outlook is not severe, between 110 and 120 the mortality has been suggested as being 20 per cent., with the pulse-rate 140 the mortality is nearly 50 per cent., and over 150 it is 75 per cent. No other condition—such as the temperature, the number of rigors, the state of the lochial discharge—is in any way as reliable as the pulse-rate in foretelling the progress of the disease.

be supposed to have been 161 deaths in each quarter of the year. Why did the deaths go up to 298, nearly double, among those who had left the service, immediately after they left it? Half the deaths of seamen (active service) were until 1929 due to injuries; from these the retired are free, yet 625 of them died in the year after they left the service; but only 642 of the 127,518 men who remained! Can this mean anything else than that many of those shown on their death certificates as seamen "retired"—death certificates required within a year of their leaving the sea—had left the service through illness; had in fact left the service only to die. Unfortunately we are not told from what diseases these 298 in three months, or 625 in a year, did die. What else but phthisis will explain the great mortality at the younger ages, for of the 298 who died within three months of sea service, 208, more than two-thirds, were under 55. In the last five years the death-rate from phthisis was 0·13 in the Army, 0·18 in the Navy, and rather over 0·18 in the merchant service, but we must not forget there are 280 other deaths from respiratory tuberculosis among the retired merchant seamen unexplained. An appendix to this blue-book showing the causes of the deaths of the 298 men who died within three months of sea service, indeed of all men who died within the year, would illuminate our knowledge of the diseases of the seaman. Until this has been seen, or some better information provided, it will always be felt that the tale of damage to health by service at sea is but incompletely covered by the Return of deaths in the active service among the "occupied seamen," annually published by the Board of Trade.

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moribund patients do not. But by adding formalin, or heating the toxin it is possible to make it much less toxic though its immunising properties remain satisfactory. I have tried using toxoid in a few cases of sycosis; the results were not dramatic, but there was considerable improvement in the condition.

Another method of treatment is passive immunisation with antiserum. Until recently no antiserum, made in the light of modern knowledge, was available, but Dr. G. F. Petrie of the Lister Institute, has prepared for us an antiserum by injecting a horse with toxin having a high content of hæmolysin and leucocidin obtained from a strain of staphylococcus causing boils. Again there have been no dramatic results, but in some cases the use of the antiserum seemed to be followed by rapid separation of the slough, healing, and the subsidence of toxic symptoms in cases of carbuncle. In other cases there appears to have been little result; but carbuncles vary so much in the course they take that it is difficult to speak with certainty of the effects of the serum. Some pyæmic cases benefited; some, in which there had been spread of pyæmic abscesses before injection, developed no more abscesses after serum treatment had been begun. In any case, antiserum is the only specific remedy we have at the present time and therefore deserves trial in severe infections. It should be given in 40 c.cm. doses three or four times during the first four days. No further doses should be given after ten days.

Antivirus does not give striking results in my experience. I will not discuss the value of metals such as manganese, since they do not come under the heading of specific therapy. It is important to remember that staphylococcal infections are cut off by a zone of inflammation from the deeper layers of the skin, and if staphylococci are introduced into these deeper layers the patient may die. When incising a boil please be content with an opening that you consider too small rather than run the risk of spreading infection into the deeper tissues. To incise a carbuncle unless to evacuate pus is unjustifiable.

SPECIAL ARTICLES

MORTALITY IN THE MERCANTILE MARINE

By Fleet-Surgeon W. E. Home, O.B.E.

Everyone interested in the health of the British seamen of the mercantile marine will be very grateful to the Board of Trade for initiating the investigation and publishing the statistics which now see the light in this blue-book.[1] In 1924 the Royal Sanitary Institute memorialised the authorities on the need for the issue of an official death-rate for British merchant seamen, as it was felt that the sanitary defects under which merchant seamen suffered in their ships must make their effects visible in the death-rate, increasing deaths in certain directions, and so helping to make improvements more obviously necessary. The Institute wanted a death-rate found yearly for seamen, being convinced that the insanitary conditions they knew of on ships could not but write their mark on any true death-rate; and, given such, the need of improvements would come clearly to notice, when something more would be done than seemed likely so long as there was no accurate knowledge to force it on. They wanted a death-rate for "occupied" seamen, the men on ships, the men with whom the port sanitary authorities were concerned, the men whose deaths were reported in the annual return of the Board of Trade, the men suffering from the sanitary defects of the ships. But when the committee which the Board appointed to examine this question reported, they were found to have decided that a death-rate for "occupied" only was impracticable of attainment, and recommended the search for a death-rate for the "occupied and retired." At that time the securing of this information seemed more visionary than the original objective. The deaths of "occupied" were known, the number at risk on certain census days was also known, and was roughly estimated for the year by the Board of Trade, but as for the "retired" or unoccupied seamen, whose deaths were only known to the local registrars, there was no faintest idea of the total number of their deaths, still less of the total at risk. How could a death-rate be got at?

Now comes along this blue-book, with a careful record and analysis of the facts, and the whole matter is most lucidly cleared up. Thus definitions are given of "seamen," as understood by the Registrar-General in the general Census, and by the Registrar-General of Shipping and Seamen in the Census of Seamen; the difficulty of estimating a total of seamen for any year is discussed, and the extreme uncertainty of securing complete and accurate lists of deaths and numbers of "retired" seamen is explained. Ultimately the deaths of each class in the examination year (ending Sept. 30th, 1929; what a pity not a calendar year!) were collected. They were 642 among the 127,518 "occupied" seamen, and 2524 among a body of "retired" seamen, whose number cannot be stated until the complete figures of the general Census of 1931 are available.

The "occupied" and "retired" of seamen have to one another a relation quite different from that existing in other trades. Generally the "occupied" go on together, as in a river like Niagara, quite smoothly until the break comes, when they plunge into the "retired" pool, whence is no return. But the service of seamen is not continuous, they sign on for a ship and are "occupied," they sign off and cease to be "occupied," returning again to that class when they sign on for another ship. Imagine a terra-cotta water cooler, with a saucer below. Water oozes through its sides, some is evaporated (deaths), some drops into the saucer below (men signing off), and is again returned to the cooler (men signing on for a new ship). The water in the cooler represents the "occupied seamen"; some of them die and do not return, but many come back and with recruits keep up the total of the industry. The important point is that the number unemployed on any day is unknown, their health conditions are unknown, and these indeed often come only to notice when the men die, and are then registered as "retired." Now nothing was known about these deaths until this blue-book appeared, in which is mentioned that in the examination year 2524 deaths of "retired" seamen occurred, of 2022 of whom the time since their last sea service is stated; and 298 died within three months of leaving the sea, a great mortality just when they left. Surely these deaths were due to the active service. For as there were 642 deaths in the active service in the year, there may reasonably be supposed to have been 161 deaths in each quarter of the year. Why did the deaths go up to 298, nearly double, among those who had left the service, immediately after they left it? Half the deaths of seamen (active service) were until 1929 due to injuries; from these the retired are free, yet 625 of them died in the year after they left the service; but only 642 of the 127,518 men who remained! Can this mean anything else than that many of those shown on their death certificates as seamen "retired"—death certificates required within a year of their leaving the sea—had left the service through illness; had in fact left the service only to die. Unfortunately we are not told from what diseases these 298 in three months, or 625 in a year, did die. What else but phthisis will explain the great mortality at the younger ages, for of the 298 who died within three months of sea service, 208, more than two-thirds, were under 55. In the last five years the death-rate from phthisis was 0·13 in the Army, 0·18 in the Navy, and rather over 0·18 in the merchant service, but we must not forget there are 280 other deaths from respiratory tuberculosis among the retired merchant seamen unexplained. An appendix to this blue-book showing the causes of the deaths of the 298 men who died within three months of sea service, indeed of all men who died within the year, would illuminate our knowledge of the diseases of the seaman. Until this has been seen, or some better information provided, it will always be felt that the tale of damage to health by service at sea is but incompletely covered by the Return of deaths in the active service among the "occupied seamen," annually published by the Board of Trade.

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[1] Board of Trade: *Statistics Relating to Mortality in the Mercantile Marine.* H.M. Stationery Office. 1932. Pp. 98. 1s. 6d.

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Unlike a High Court judge, he does not sit as an umpire to see fair play while plaintiff and defendant or prosecution and defence present their respective cases. There are no parties to the proceedings at an inquest: no preliminary pleadings have narrowed the issue. The inquisition may end in the commitment of somebody to stand his trial in a criminal court; it does not begin, like a prosecution at the assizes, with the indictment of a named person upon a definite charge. Historical origins have developed the coroner as an examining magistrate. He gathers and sifts the statements and suspicions of the neighbourhood. He is unfettered by the strict rules of evidence, for he scarcely knows what may or may not be relevant. He examines the witnesses himself but in common fairness, where the evidence affects particular persons, he will allow them or their representatives to ask their questions too. In spite of a recent instance to the contrary, he usually permits neither counsel nor solicitor to address the jury. It is said, on the authority of Garnett v. Ferrand, that he has a discretion to exclude barristers and solicitors from his court or at any rate to prevent their examining or cross-examining a witness. Be that as it may, the conduct of the whole investigation is in his own hands; he is largely a law unto himself; and thus those who have wide experience of attending inquests in many towns and counties sometimes report singular diversities of local practice. It would be a pity if those divergencies should become too conspicuous. Coroners should be able to control the proceedings in their courts without recourse to a general muzzling order.

The Severity of Coroners' Juries

Mr. Justice MacKinnon, charging a grand jury recently at Gloucester, contrasted the attitude of juries in coroners' courts and at assizes. It was, he said, a matter of wonder to him that coroners' juries seemed only too eager to find verdicts of manslaughter against motorists, whereas assize juries were unduly reluctant to convict a motorist on such a charge. He was inclined to ascribe this difference of attitude to the fact that the former class of jurors is conscious that the coroner has no power to award punishment without further trial, whereas at assizes a jury has a feeling of responsibility inasmuch as punishment must follow a verdict of guilty. The case which elicited these observations was one in which an advertising agent had left his motor-car at the side of the road while he went into a shop. There was a slope in the road, the brakes gave way, the car ran down a hill and killed a boy. The coroner's jury found a verdict of manslaughter and in consequence—without, apparently, any commitment by magistrates—the motorist's name appeared in the calendar of persons for trial at Gloucester assize. Taking the judge's hint perhaps that the coroner's jury had taken the case too seriously, the grand jury threw out the bill against the motorist who thus had not to stand his trial after all.

IRELAND

(FROM OUR OWN CORRESPONDENT)

PROPOSED REDUCTION OF SALARIES

The Cork county council recently invited its several whole-time officials, lay and medical, to consent to a deduction of 10 per cent. from their salaries. The enforced reduction in the salaries of civil servants carried out some months ago has, no doubt, encouraged local authorities to treat their officials with an equal lack of consideration. The salaries of the whole-time medical officers of the County Cork are already as low as can reasonably be expected, and there is no reason why they, more than any other class of the community, should be called on out of their own pockets to contribute to the relief of the rates. There is little doubt that if the whole-time medical officers were to fall into the trap set for them the next attack would be made on the salaries of the part-time medical officers, and the whole fruit of the struggle of the last 30 years for adequate remuneration would be imperilled. Reduction of salaries cannot at the moment be carried out except by consent.

PARIS

(FROM OUR OWN CORRESPONDENT)

NEGLECT OF NOTIFICATION OF INFECTIOUS DISEASES

The legislative machinery for the notification of infectious diseases in France exists right enough. But its wheels do not always turn. There is article 15 of the law of Nov. 30th, 1892. There is also article 5 of the law of Feb. 15th, 1902. This legislation deals with the conflicting interests of respect for professional secrecy and respect for public health. But such rules are apt to receive cavalier treatment at the hands of the practitioner who is careless and forgetful, or who thinks in terms of the individual (his present patient) rather than in terms of the community (potential patients who may suffer from his neglect to notify). Matters came to a head a short time ago with a formal complaint to the Academy of Medicine by Dr. A. Loir and Dr. Daniel, of le Havre. They stated that for some time past medical practitioners have been sheltering behind professional secrecy in order to avoid notifying their cases of infectious diseases. They added that throughout France certain doctors, and even groups of doctors, betray the same deplorable tendency. Now the Academy of Medicine is a useful forum for complainants for this reason, among others, that its transactions have the ear of an important public. What is said at the Academy of Medicine to-day filters quickly out into the streets, if not to-morrow, then not many days later. And the daily illustrated paper *Excelsior*, whose profusion of pictures and paucity of words have endeared it to a vast public, has taken up the hue and cry in an interview one of its staff has had with Justin Godart, Minister of Public Health. In this interview he draws attention to a point which the defaulting medical practitioner may have overlooked, and which should prove a spur to conscientious notification. It is this, that while the fine for failing to notify a case of infectious disease may be only 5 francs, the payment of this modest sum does not necessarily mean that the matter ends there. For if failure to notify a case of infectious disease is followed by its spread to some other person or persons who bring an action for negligence against the practitioner concerned, the afore-mentioned fine may prove a stepping-stone to damages of a very different value.

TWO CONGRESSES

The forty-first Congress of French Surgery, which took place in Paris early in October, gave its president, Prof. Pierre Duval, an opportunity to voice his views on the educational system which turns out French surgeons. Besides such standard subjects as physiology and anatomy, he would like the future surgeon to have more than a nodding acquaintance with other subjects. He should, for example, take part in the laboratory work of experimental medicine. The evolution which Prof. Duval would like to see hastened is that from the merely dexterous handicraftsman to the scientist who has taken a doctor's degree in surgery. The subjects on which attention was focused at this congress were the surgery of the heart and neighbouring structures, the surgical treatment of the diseases of the blood—a subject whose very title might have been given a Gilbertian interpretation only a few years ago—and the surgical treatment of chronic, non-tuberculous diseases of the hip.

In his opening address to the twenty-second Congress of French Medicine, Prof. Fernand Bezançon tried to extract some main guiding lines out of the tangle of modern polypharmacy. It is not only that an infinite variety of remedies is now available for one and the same disease; an infinite variety of diseases is treated by one and the same remedy. Protein-shock therapy is dispensed round-handedly to sufferers from boils, urticaria, asthma, and so on; gold is administered to patients with another wide range of diseases, and specificity in treatment has become a confused conception in some quarters. The employment of one and the same drug in a host of different diseases may, however, be defended if proof can be found of the existence of certain features common to all these apparently different ailments. It is probably to interpret Prof. Bezançon truthfully, to credit him with a greater belief in the future of the remedy which acts on the patient's tissues than in that which is supposed to have some specific action on invading cells.

FIRST-AID ON THE HIGHWAYS

During the recent meeting of the board of governors of the League of Red Cross Societies, which brought to Paris Red Cross representatives of 58 different countries, a demonstration was given of air ambulances and first-aid stations on the highways. After visiting Le Bourget airport and inspecting a passenger aeroplane capable of conversion into an air ambulance on short notice, the Red Cross delegates were taken on the Senlis road, where they inspected some of the 2000 first-aid posts which have been established along approximately 8000 kilometres of roads in France by the Union Nationale des Associations de Tourisme, in conjunction with the French Red Cross. Dr. Béhague, president of the Association's committee on first-aid on the roads, gave an account of the functioning of the system which is now working with such marked success in France.

PANEL AND CONTRACT PRACTICE

Omission to Disclose

AT the twenty-ninth conference of the National Association of Insurance Committees, which met recently at Buxton, the president, a Lancashire man, made the significant declaration :—

> "It is admitted on all hands that the insurance medical service has justified itself and that it is incomparably better than any previous service available to the same class of person. It is a lasting tribute to all parties, to the committees, the doctors, and the chemists, who are working together in hearty and harmonious coöperation, that such sound progress has been made."

Some of the resolutions before the conference were of the hardy annual type. The Croydon representative contended once again that complete freedom to change his doctor should be given to insured persons, refusing to admit that frequent change may be due to pique and leads to excessive certification. A London delegate said he could prove from figures in his office that the restrictions on change had reduced the number of claims and the suggestion of free choice was lost. On the other hand an amendment was carried to substitute three months for one month in Clause 7, III., of the first schedule of the Medical Benefit Consolidated Regulations, 1928. This clause deals with the patient who obtains treatment privately from a doctor without declaring the fact that he is an insured person. At the present time he can make a claim either for a refund of the fee paid or for a withdrawal of the doctor's account, but he must claim within a month. A large number of these claims have to be disallowed on the ground that they are "out of time" The doctor is not likely to welcome this suggestion because anything which tends to delay such claims will make it more difficult to decide the facts. A certain number of insured persons claim private treatment and deliberately omit to disclose to the insurance practitioner (not necessarily their own) that they are insured persons. They do this thinking they will obtain better treatment, no waiting about at chemists for medicine. The doctor's medicine is always thought to be better than the chemist's. When treatment is safely over they claim from the insurance committee a refund under the clause. Committees generally act fairly in these cases; they allow or disallow according to the merits of the case, and they rarely inflict a fine although they have the power to do so. The clause gives much trouble in the way of correspondence with committees, looking up records, claims to be sent in for medicine supplied, arguments as to how the doctor was to know or not to know the person was insured, and so on; but it does prevent the doctor coming before the medical service subcommittee on a charge of receiving fees improperly.

A Question of Personal Service

The London Insurance Committee spent much time this week discussing the question of an assistantship and personal service. In this case the practitioner who has a smallish panel in the north of London bought the practice of a retiring practitioner south of the river with a large panel. He went himself to live on the south side, placing an assistant in residence on the north where he arranged himself to visit and attend patients at least four times a week, and more frequently if asked for. The insurance committee refused permission to employ an assistant. The panel committee, after hearing the practitioner, decided that he should be allowed to employ an assistant. The Ministry will presumably be asked to decide. One argument used was that all the insured persons in the northern practice had selected this doctor so that they might have his personal service; to put in an assistant to attend them was not fair to them. The position really is this. A principal is bound by regulations to do his work himself unless prevented by absence from home, illness, or other reasonable cause, when he must provide a deputy; assistants are entitled to deputise for a principal. An insured person therefore cannot protest at being attended in the first instance by the assistant, but he can (if he is so disposed) demand that in future he shall be attended by the principal, and he is, of course, entitled to continuity of *treatment*.

CORRESPONDENCE

CHLOROFORM CAPSULES IN CHILDBIRTH

To the Editor of THE LANCET

SIR,—In your issue of July 30th mention was made of the fact that a supply of chloroform capsules, as described by Mr. L. C. Rivett, F.R.C.S., in his paper read before the Royal Society of Medicine on June 17th, could be obtained free of charge for experimental purposes by all hospitals for a period of three months upon application to the secretary, National Birthday Trust Fund, Empire House, 175, Piccadilly, London, W.1. I am glad to say that 73 hospitals have availed themselves of the offer, and tests are accordingly being made on a wide scale. The results so far reported have been uniformly satisfactory.

It is now desired by the National Birthday Trust Fund to extend the offer to all medical practitioners for a further two months. Two boxes of 12 capsules will be supplied free to any registered medical practitioner for experimental use in return for full reports, forms for which will be enclosed; and a further supply can be obtained at cost price or free, if required for use in genuinely necessitous cases. It is especially hoped that medical officers of health will make a trial of these capsules.

It is also desired to make clear that within the three months period from the first application, repeat orders from those hospitals which have already received a supply are welcomed. Although the majority of hospitals have applied for considerable quantities and have repeated their orders, a certain number have asked for only one box, scarcely a sufficient quantity for an adequate test.

As already pointed out in your columns the reports, when received, will be submitted for examination and report to a medical committee of which Dr. J. S. Fairbairn, President of the College of Obstetricians and Gynæcologists, is Chairman.

I am, Sir, yours faithfully,

JULIEN CAHN,
Chairman, National Birthday Trust Fund.

Empire House, 175, Piccadilly, W., Oct. 31st, 1932.

SAFE MILK

To the Editor of THE LANCET

SIR,—During the past few weeks letters have appeared in your columns which indicate that doubt still exists as to the safety of Grade A (T.T.) milk, particularly as regards the freedom of this grade of milk from tuberculous infection.

So far as Scottish conditions are concerned, figures are available which show conclusively that raw milk from licensed tuberculin-tested herds is remarkably free from such infection. Three years ago, in a survey of the results of routine tests carried out in three large Scottish cities,[1] I pointed out that while milk from ordinary herds showed a fairly high incidence of infection, an examination of 550 samples of milk from tuberculin-tested herds supplied to Glasgow hospitals failed to reveal a single positive sample. Some doubt existed, however, as to the reliability of the routine test employed in examining these samples, and it appeared desirable that a further comprehensive investigation should be made, using a far more stringent technique. During the past two years such an investigation has been carried out at the Hannah Dairy Research Institute, the milk samples being tested by inoculation into duplicate guinea-pigs, the subsequent post-mortem examination being carried out after a four-week and an eight-week period respectively. Samples of milk were obtained direct from practically every licensed tuberculin-tested herd in Scotland and, in addition, a large number of retailed bottles of Certified and of Grade A (T.T.) milk were bought "over the counter" in the four largest Scottish cities. Altogether 750 samples were examined. *Of this number only one sample proved positive*—a result which is in marked contrast with Dr. Gloyne's findings.[2] Moreover, an immediate investigation of the herd from which this single infected sample was obtained revealed the source of the infection. Briefly, a defective fence had allowed the "free" cattle to mix with neighbouring infected stock, and a subsequent tuberculin test on the "free" herd revealed the presence of six newly infected reactors.

The potential danger to the milk-supply of such casual infection in a tuberculin-tested herd is obviously a matter of great importance, and the Hannah Dairy Research Institute has therefore also undertaken an inquiry into the frequency of infection in Scottish licensed herds. The report of this inquiry (issued as Bulletin No. 2 of the Institute) shows that out of 28,221 tuberculin tests made since 1923 only 428 proved positive, indicating the average number of reactors to be about 1·5 per cent. of the cow population of tuberculin-tested herds. Since it is probable that not more than 1 per cent. of such reactors can be assumed to secrete infected milk, it follows that the actual proportion of reactors in licensed herds which might be considered as actively dangerous, works out at 1 per cent. of 1·5 per cent., or 3 in every 20,000 animals. Moreover, it was shown in the same report that over 90 per cent. of the reactors in such herds had contracted infection from easily avoidable sources so that the risk of dangerous infection in an efficiently run herd would appear to be minute.

The above results indicate that, as far as Scottish conditions are concerned, the risk of tuberculous infection in milk from licensed tuberculin-tested herds—as judged either by direct examination of milk samples for living tubercle bacilli, or by inference from the number of reactors in such herds—is in practice negligible. There remains the risk of infection with other milk-borne diseases: septic sore-throat, diphtheria, scarlet fever, and enteric fever. Obviously it is impossible to give an assurance that *any* type of milk, or indeed any foodstuff, will be free from the risks of such infection since these arise from casual contamination rather than from faulty methods of production. At the same time it seems likely that the more careful methods which must be used in the production and handling of Certified and Grade A (T.T.) milk (as judged by the low bacterial count required for these grades) and the more educated mentality of the workers concerned will limit the risk of infection. That this is true may be shown from the following facts. In the first place it appears that no milk-borne infection has ever been traced to Certified or Grade A (T.T.) milk in any of the four largest Scottish cities although, according to the recent report (for the year, 1931) of the medical officer of health for Glasgow, milk-borne infections have been traced relatively, frequently to ordinary raw milk, and in one instance (200 cases of scarlet fever) to a pasteurised milk supply. In the second place, I understand that in the large scale milk-feeding experiment carried out in Lanarkshire schools when 10,000 children were given raw Grade A (T.T.) milk for a period of four months, no cases of milk-borne disease occurred. This fact should give some reassurance to those of your correspondents who have expressed doubt as to the safety of Grade A (T.T.) milk for children of school age.

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[1] Brit. Med. Jour., 1929, ii., 453.

[2] Tubercle, July and August, 1932.

The whole of the facts stated in this letter apply to Scottish conditions. I do not know how far similar facts hold for English conditions, though Dr. Gloyne's results give some grounds for uneasiness. In this connexion it is possible that the administration of the Milk Designations Order is more efficient in Scotland than in England owing to the fact that while in Scotland it is the rule for each county to have at least one full-time veterinary officer, in England it is the exception. In any event it appears that there is complete justification for the stipulation made in the Education (Scotland) Act, 1930, that free milk supplied to school-children by local education authorities in Scotland should either be "Certified milk, or milk of the next best grade available." The real difficulty, at least so far as the south-west of Scotland is concerned, is the fact that the existing supply of milk from tuberculin-tested herds seriously exceeds the demand. According to the chief veterinary officer for Ayrshire, for instance (report for 1931), only 60 per cent. of the milk of 55 licensed herds in his county reached the market in 1931 as graded milk, the excess of supply over demand averaging about 1600 gallons per day. In addition, he estimates that a further supply of 1200 to 1300 gallons per day could be made available from other tubercle-free herds if the demand were stimulated. In this area alone, therefore, a total of practically 3000 gallons of milk from tubercle-free herds cannot find a market. It is a disaster that progressive milk producers should receive such scant encouragement in their efforts to provide the public with a first-rate product.

In conclusion I desire to emphasise the fact that this letter is not directed against those who advocate the pasteurisation of the bulk of the ordinary milk-supply, a procedure which may well be necessary until the incidence of bovine disease is reduced and the general level of efficiency in the production of milk is raised. My sole object is to show that a very definite safeguard against milk-borne disease is already available in Certified and Grade A (T.T.) milk, that a plentiful supply of the latter could be made available at a reasonable price if the demand were increased (particularly if the Government agreed to give some practical assistance to those desirous of clearing their herds of tuberculosis), and that, so far as any future national policy is concerned, the encouragement of licensed tuberculin-tested herds has the two-fold advantage of providing a safe milk-supply for the public, and of effecting valuable improvement in the health of farm stock.

I am, Sir, yours faithfully,

NORMAN C. WRIGHT.

The Hannah Dairy Research Institute,
Kirkhill, Ayr, Oct. 28th, 1932.

THE POLICY OF SCHOOL-CLOSURE

To the Editor of THE LANCET

SIR,—Once more the anxious question of the advisability of the dispersal of a school when cases of epidemic poliomyelitis appear is raised, and no doubt will continue to be raised until something definite has been settled. This time the Headmaster of Stowe has to bear the brunt of what must have been clear to him as the only course to save the lives and limbs of boys committed to his charge. The meticulous care he took to prevent the spreading of the infection safeguarded the community. Letters appearing in the daily papers make it clear that parents are carrying out his suggestions, and are grateful for getting their boys out of the danger zone.

It is no light matter disbanding a school, and it is only done when there is no other safe course evident to the "men on the spot." From the nature of things, these men are above the average—mediocrities do not get or hold high competitive appointments—and are well-qualified to weigh pros and cons and to decide. The Ministry of Health do not seem to think so, and proceeded to say so by broadcast on Oct. 24th (which was reproduced in the papers of Oct. 25th), obviously—as I shall show—without full knowledge of the facts. To take some of the broadcast points :—

Slight rise :

8 cases during week ending August 20th.
48 cases during week ending Oct. 8th.

A six times increase is not slight.

Singly and widely scattered.

This is wrong. The essence of poliomyelitis is that it appears in two forms, sporadic and epidemic. They are clinically identical but vastly different in effects. The sporadic form does not spread, the epidemic form does and it is deadly. The kindest thing is to assume that this is a clerical error which will be corrected.

Balance of advantage is in favour of keeping highly susceptible persons within the danger zone. How is the balance arrived at ? Let us have the data, please.

Conducted on hygienic lines.

My reply to this is to cite the table given in A. S. MacNalty's "Epidemic Diseases of the Central Nervous System" and Dr. MacNalty's comment on the figures.

TABLE XVI. *Poliomyelitis—Sanitary Conditions*

—	Dirty.	Fair.	Clean.	No data available.
Patient ..	0·9	4·8	53·5	40·8
House.. ..	3·9	14·5	63·6	18·0

These figures relating to the cleanliness of the patient and house approximate closely to similar figures which were obtained for the year 1917—namely, 53·7 and 63·3 per cent. They indicate, as do American statistics, that the disease cannot be regarded as specially associated with uncleanliness of the patient or of the patient's surroundings.

The obvious deduction is that good hygienic surroundings favour poliomyelitis. This was also seen in a spot-map of the Leicester epidemic of 1926. Stoneygate had more cases (proportionally) than Belgrave Gate—the former "west end," the latter a slum.

In the 1926 epidemic Broadstairs schools asked for advice and they were advised to carry on. They did—until parents removed what was left of their children. Other schools, knowing the disastrous results of the carry-on policy, dispersed, with happy results to their school populations. This question of dispersal of schools during epidemics of poliomyelitis is important : it must, and can, be definitely settled by careful investigation of past epidemics. Broadstairs alone affords valuable evidence. Let us have a full report of the Broadstairs epidemic from the Ministry of Health.

The Britisher's innate respect for "authority" makes headmasters loath to disband when they know it is the only safe course. It is not fair to these men to be acting in opposition to "authority." Until the Ministry of Health can say "We have shown you how to detect carriers of poliomyelitis virus and effectively treat the disease," safety first; dispersal is the best policy.

I am, Sir, yours faithfully,
WILLIAM DUNN,
Oct. 29th, 1932. Medical Officer to Uppingham School.

A CHRISTMAS APPEAL

To the Editor of THE LANCET

SIR,—May I ask once again for the kind hospitality of your columns on behalf of the Royal Medical Benevolent Fund? We have for several years past given a Christmas gift to all our annuitants and to the poorest of the grantees; and in order to accomplish this we have been compelled to ask for the assistance of our brethren in the medical profession. This is the special object for which I desire to secure your approval and support.

We hope with the help of our sympathisers to allot 30*s.* each to these poor folks. In these hard times old and infirm doctors, widows and children of deceased doctors, are often hard pressed even for the bare necessities of food, clothing, and fuel. Anything that is given to us for this object will be a real boon.

Donations may be sent to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, Cavendish-square, London, W.1.

I am, Sir, yours faithfully,
THOS. BARLOW,
President of the Royal Medical Benevolent Fund.
Nov. 1st, 1932.

PHARMACOPŒIAL LINIMENTS

To the Editor of THE LANCET

SIR,—Amongst the preparations in everyday use in dermatological practice, Linimentum Calaminæ has been proved of great value. The name is unfortunate, as most liniments are more liquid, and are generally understood to be applications that are rubbed on. Lotio Calaminæ Oleosa would indicate its uses more accurately. The formula is to be found in the British Pharmaceutical Codex 1923 as follows:

Prepared calamine	45·7
Zinc oxide	34·3
Solution of lime	500·0
Olive oil to	1000·0

In the pharmacopœias of the general hospitals it varies slightly, with olive, sesame, arachis, or almond oil as the oily constituent.

The consistency of all olive oil preparations changes according to the amount of fatty acids in the oil, and therefore the finest quality of oil will give an inferior preparation, which separates badly. It has been found necessary, therefore, to use either an inferior oil of high acid value or to add a small quantity of oleic acid to make a stable product. The Pharmacy Subcommittee for the revision of the B.P.C. therefore proposes the following formula:

Calamine	45·7
Zinc oxide	34·3
Oleic acid	5·0
Wool fat	10·0
Liquid paraffin	485·0
Solution of calcium hydroxide	500·0

This gives a uniformly good preparation which does not thicken appreciably on keeping and is therapeutically and pharmaceutically sound. It retains all the cooling, evaporating, and soothing properties without the disadvantages above-named. It has been tried clinically through the courtesy of Dr. A. M. H. Gray, at University College Hospital and at the Hospital for Sick Children, Great Ormond-street, for over six months. I am permitted to state that clinically the new preparation is not inferior in any way to the old one and possesses the advantage, both for private and hospital practice, of better keeping properties.

Linimentum Ammoniæ B.P. 1914, after keeping for a short while, has either separated into two layers, or become so thick that it is almost impossible to remove it from the bottle. It has been omitted from the B.P. 1932, and will therefore become a B.P.C. preparation, by arrangement with the Pharmacopœia Commission. Its efficacy depends on the ammonia content and the friction with which it is applied, and not on the oil. The B.P.C. Revision Committee proposes to improve the formula as follows:

Dilute solution of ammonia	250
Oleic acid	25
Liquid paraffin	725

Mix the oleic acid with the liquid paraffin, add the dilute solution of ammonia, and shake.

This preparation does not thicken or separate, and yields a reliable and satisfactory liniment.

Early publicity and criticism of changes in official formulæ are desirable, and it is with this object that I ask the courtesy of your columns.

I am, Sir, yours faithfully,
J. WICLIFFE PECK.
Hospital for Sick Children, Great Ormond-street, W.C.,
Oct. 17th, 1932.

INDICATIONS FOR AND AGAINST CÆSAREAN SECTION

To the Editor of THE LANCET

SIR,—In your report of this discussion (p. 944) an observation I made is incorrectly reported, and my own observation itself is inaccurate. I beg leave to correct the double error. The report should have read that an analysis of the deaths in eclampsia in Great Britain (excluding Ireland) showed that out of 45 maternal deaths, 17 women died undelivered —i.e., 37 per cent.

I am, Sir, yours faithfully,
EVERARD WILLIAMS.
Wimpole-street, W., Oct. 28th, 1932.

TROPICAL ULCER AS A DEFICIENCY DISEASE

To the Editor of THE LANCET

SIR,—In your issue of Oct. 22nd (p. 889) Dr. L. J. A. Loewenthal tells us that the great majority of tropical phagedænic ulcers healed rapidly when daily intravenous injections of calcium chloride were given. Many years ago I published a note[1] on the value of calcium iodide in the treatment of ulcers of the legs, especially those of a chronic nature. At that time I received a number of letters from abroad including some from the tropics in which it was stated that calcium iodide had proved of value in such cases. I drew attention to the fact that these ulcers occurred in people whose food contained too little lime. This point was re-emphasised in my book "The Heart and Spleen in Health and Disease."

I am, Sir, yours faithfully,
G. ARBOUR STEPHENS.
Swansea, Oct. 28th, 1932.

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[1] Brit. Med. Jour., 1906, ii.

THE ACTIVATION OF INSULIN

To the Editor of THE LANCET

SIR,—I have read Dr. Himsworth's stimulating article in your last issue (p. 935) with great interest and I agree that the best explanation of the relative inefficacy of insulin in some cases is the absence of some insulin activator—called by him insulin-kinase. Studies of an insulin-resistant diabetic some years ago[1] led me to suggest in this case the absence of a necessary "insulin co-enzyme." Dr. Himsworth's suggestion that the liver is at fault in such conditions is interesting, but in my experience not supported by clinical facts, although I have been on the outlook for such a possibility. I shall look forward with great interest to the publication of the experimental facts on which he bases his hypothesis.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 29th, 1932. R. D. LAWRENCE.

CITRATED BLOOD FOR INJECTION

To the Editor of THE LANCET

SIR,—My friend, Dr. R. C. Lightwood, has called attention to the fact that in my paper on Hæmorrhagic Disease of the New-born (THE LANCET, Oct. 22nd, p. 887) I did not give any reason for recommending that blood injected intramuscularly or subcutaneously should be citrated. Theoretically it would seem unwise to alter in any way the chemical composition of blood before injection; but in actual practice there is no evidence that citration of blood lessens its efficacy in controlling hæmorrhage, whilst most workers will admit that this simple precaution against clotting of the blood in syringe and needle ensures that the injection of an adequate volume of blood may be made with ease and without undue haste. I had no other reason for my recommendation.

I am, Sir, yours faithfully,

Liverpool, Oct. 29th, 1932. NORMAN B. CAPON.

CEREBELLAR SYNDROME IN MIGRAINE

To the Editor of THE LANCET

SIR,—The symptoms Dr. William Phillips mentions (last week, p. 941) are somewhat rare, but sufferers from migraine are very diverse and suffer from a multitude of different syndromes—cerebral, ocular, non-ocular, abdominal, &c., and much has been written on the subject. I was, however, surprised that no mention was made of any administration of arsenic or luminal in this case, for the latter especially is excellent in migraine; given if possible before an impending attack, for if given during an attack it is not absorbed, owing to spasm of the pylorus.

I am, Sir, yours faithfully,

Cambridge, Oct. 31st, 1932. H. WESTGARTH TAYLOR.

CORRIGENDUM.—In the letter by Mr. H. M. Woodcock, D.Sc., on Proteolytic Ferment in Amœbic Dysentery (last week, p. 972), the last sentence in the first paragraph should read: In the malarial parasites, for instance, the residual product of digestion, the pigment, is formed only in the cytoplasm of the parasite, never in the more or less used-up red corpuscle.

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[1] Quart. Jour. Med., 1928, xxi., 359.

PUBLIC HEALTH SERVICES

Muddle-headed Economy

ANTICIPATING curtailment of educational activities to be recommended by the Government's Committee on Local Expenditure, a recent issue of *Education* animadverts upon the working of the school medical service, which, it is alleged, could be made equally effective at less than the present cost. The blame for this state of affairs is placed, not upon the local education committees on whom ultimately responsibility must fall, but upon the professional administrators of the service. There are vague phrases about loose organisation and "professional unapproachableness," but no evidence is produced for the statements, or rather the insinuations, made. It is remarkable that the official organ of the Association of Education Committees should be so ready to expose what it thinks to be the weakness of a service for which its constituent bodies are directly responsible, and when the relatively small cost of the service is considered, the criticism manifests some lack of a sense of proportion. It might more fitly have been directed against those laggard authorities who, by their inadequate staffing and equipment of the service, continue to hinder its efficiency. Of the success of the service in the more progressive areas in producing results there can be no question, and the suggestion of professional incapacity in its organisation is unjustified by facts. Efficiency in the child welfare and school medical services is a premium paid for the health of the nation; any reduction in that efficiency would lead to a return to conditions of former years. The suggestion that reduction of costs would not curtail efficiency shows ignorance of the workings of a service which is an integral part of the general educational system. It is impossible to believe that the article reflects a general feeling among education committees or their chief officials. If it does, it can only be hoped that the control of the school medical service in England will, as in Scotland, be transferred from education committees, and become part of the general health service of the country—as indeed in its activities and purposes it essentially is.

Endocrine Disturbances in School-children

Dr. H. J. Phillips, assistant school medical officer for the county of Kent, has kept a record of all the children during the year who showed endocrine disturbances. Visible enlargement of the thyroid gland was noted in 74 cases—20 boys and 54 girls—the highest figure being in the 13 age-group. Four of the cases showed hyperactivity and, in addition, six children had clinical signs of hyperthyroidism without visible enlargement of the gland. None of these 10 cases had any obvious septic focus; all of them were at or about the age of puberty, a time of mental strain. Dr. Phillips would diagnose hyperthyroidism, whether the thyroid is enlarged or not, in a spare boy or girl, at about the age of puberty, who has tachycardia, fine tremors of the upper limbs, and a tendency to general over-action. The question of treatment is difficult. Experience has shown that in a large number of these cases the symptoms subside without treatment, but the majority pass from the observation of the school service with symptoms still present. Whether they are potential cases of Graves's disease can only be established by careful following-up. Dr. Phillips does not mention that those who have to deal with senior students and teachers find a considerable proportion of hyperthyroidism among those who have to be invalided owing to nervous breakdown. Experienced examiners in fact hesitate to admit candidates who show even slight signs of this condition. Twelve of the children with enlargement of the thyroid gland showed symptoms of the opposite type; though none would have been called a cretin, they had in varying degree the malar blush, the heavy folds between nose and cheek, large tongue, supraclavicular pads of fat, and mental hebetude. None of these children had had any adequate treatment. The majority of the goitrous children showed no sign of either plus or minus thyroid activity, and this might appear to justify a laissez-faire attitude, were it not that simple goitres of months' or of years' standing may quite suddenly become hyperactive and develop into Graves's disease. "I am of opinion," Dr. Phillips writes, "that where treatment can be tried and adequately controlled, there is no justification for withholding it." He advises that every case should be carefully watched, the only sure guide to the functioning of the gland being the estimation of the basal metabolic rate. Such control might readily be available in school clinics, and Dr. Phillips regrets that facilities are not afforded.

Of disturbances of pituitary function there was one case of mild acromegaly, one of infantilism, and 49 cases of Fröhlich's syndrome in varying degree, especially the characteristic deposit of fat, the undeveloped external genitals in the males, and the mental somnolence. Dr. Phillips was struck by this rather large number of such cases found in his area. "Whether the actual incidence is greater in north-west Kent than in the rest of the country," he says, "I have no figures to show, but it is interesting to note that the great classical example of Brissaud's infantilism—viz., the fat boy in 'Pickwick Papers'—was created by the great novelist who wrote so many books based on the very area from which my cases have been drawn." The parents had not secured treatment for any of them, but Dr. Phillips, watching some of the worst over a period of years, noted that the symptoms definitely increased. He would try in every case the effect of compound pituitary gland and diet, plus thyroid extract where indicated; he can cite some striking successes such as that of a boy of 14 with double girdle obesity, infantile genitals, undescended testicles, beginning to get lethargic and dull at school, who after three months' out-patient treatment lost 14 lb. of weight, while the headmaster reported great improvement in his work. Cases like this are a source of satisfaction to all concerned; they offer a good field for coöperation between school medical officer and private practitioner.

The Swindon Maternity Scheme

Last year Dr. D. Brewer completed a scheme for making maternity safe in the borough of Swindon and neighbouring parts of Wiltshire. The new maternity home, claimed to be the last word in efficiency, was opened during the year, two principles, known as the New South Wales convention, being accepted in connexion with it. First, that deaths in childbearing are to be considered due to the reproductive process, unless it is proved to the contrary; secondly, that the temperature of the puerperal woman is to be recorded four-hourly during the first ten days in order that the onset of sepsis may be detected within four hours. Dr Brewer believes that this system of temperature recording, which has the effect of trebling the cases of puerperal pyrexia, will throw material light upon the occurrence of outbreaks of pyrexia, which are frequent in maternity hospitals and other institutions. The working of the home up to now suggests that about half the confinements in the borough will eventually take place there. The home is a recognised training school for midwives, and has an extern department which attended 161 deliveries and 8 miscarriages in 1931, the total number of births being 910. There were two deaths in the town in connexion with reproduction; one was from embolism, and the one death which occurred in the home—the only preventable maternal death of the year—would not have occurred had the woman received the attention which she could have had under the scheme. She was admitted moribund from antepartum hæmorrhage. Natal (including postnatal) clinics under the scheme are of three kinds: those held by the matron and the staff of midwives; those held by the woman medical officer who is inspector of midwives; and those held by the consulting obstetrician. For each patient attending the antenatal department a card is filled in, which is transferable from one clinic to another, and is available for cases delivered in the home or in the extern department, and also for domiciliary cases attended by medical practitioners or midwives. The corporation appoints a rota of practitioners to act as obstetricians to the home on behalf of cases other than those booked by practitioners. The rota consists of two private practitioners and one practitioner, with a deputy, appointed by the G.W.R. Medical Fund Society. The services of the consultant and of an anæsthetist are available for every case. Patients booking for the home as doctors' cases pay their own medical fees. Others are considered as midwives' cases, and admitted at fees varying with their income, but the corporation undertakes to pay all medical fees incurred when the midwife sends for medical assistance. The rules appear to provide for every possible contingency. Scrupulous care is taken to see that only clean cases are admitted to the ordinary wards and labour room, a separate department with its own labour ward being kept for doubtful cases. Cases of puerperal sepsis are referred to the isolation hospital, and sufferers from venereal disease are admitted to the county council's V.D. hospital. Of the 259 cases delivered in the home, instrumental assistance was given in 46—a forceps rate of 18 per cent. There were two induced abortions, one Cæsarean section, six cases of placenta prævia, four of eclampsia, and one of mania. With the exception of the case of placenta prævia (already mentioned) admitted moribund, every case was treated to a successful issue in the home, except for two cases of pyrexia which were removed to the isolation hospital, where they recovered. The scheme has won the appreciation and coöperation of the parturient mothers.

Official Advice on Nutrition

The Advisory Committee on Nutrition after a review of recent research work on this subject has advised the Minister of Health:

(1) Having regard to the cogency of the evidence that nutritional anæmia of infants can be greatly reduced by the administration of iron ammonium citrate, it would be proper for the Ministry to give practical advice on the matter to the medical officers of authorities responsible for the feeding of infants.

(2) The experimental evidence supporting the conclusion that rickets and dental disease can be mitigated or prevented by an adequate supply of vitamin D and calcium-rich foods, such as milk, eggs, cod-liver oil, in the diets of infants and children and of expectant and nursing mothers, is so cogent that it would be proper for the department concerned to call the attention of local authorities to the results obtained in Sheffield, in Birmingham, and elsewhere, and to state that, in the view of the department, these results should be applied.

(3) The Ministry should continue to emphasise the paramount importance of milk in the dietary of growing children.

Circular 1290, dated Oct. 27th, 1932 (H.M. Stat. Office, 2*d.*), implements these recommendations in crisp injunctions to county (borough) councils and other maternity and child welfare authorities. The following is a summary of the circular as given in an appendix.

SUMMARY OF CONTENTS OF CIRCULAR 1290

I. *Nutritional Anæmia in Infancy*

Nutritional anæmia is prevalent among infants, and is due to a deficiency of available iron. It is often present only in a mild degree. In its more severe forms it is found frequently in infants who were under weight at birth. Twins and prematurely born babies are especially liable to be affected.

Its chief feature is an abnormal liability to intercurrent infections, particularly colds, otorrhœa, bronchitis, and enteritis, and a tendency for infections to become chronic.

Nutritional anæmia can be prevented and cured by the administration of iron ammonium citrate to infants, or the feeding of infants with milk to which iron in an appropriate form has been added. Dried milk preparations containing added iron are already on the market.

II. *Rickets and Dental Disease*

Severe rickets is rapidly disappearing in this country generally, but in some areas the milder form of the disease is still widely prevalent among infants and young children.

Faulty dentition is widespread.

Both for the prevention and cure of rickets and to ensure a proper development of the teeth, the diet of pregnant and nursing mothers and of infants and young children should contain a sufficient supply of calcium, phosphates, and vitamin D. Of these, vitamin D is the most likely to be deficient.

The main foods containing vitamin D are fat fish, fish livers, egg yolk, milk, and butter. In cases where, for financial reasons, the purchase of eggs and butter and of adequate supplies of milk is not possible, the value of fat fish, such as herrings, sprats, and mackerel, should be borne in mind. Where margarine is the chief source of fat in a diet, those brands which contain added vitamins A and D should if possible be secured. Vitamin D may also be provided by the regular administration of cod-liver oil.

III. *Milk*

Milk is an almost perfect food. It is rich in calcium and phosphorus; it supplies protein of high biological value which is of great importance in building up a sound physique and good constitution; it provides the infection-resisting and calcifying vitamins A and D, the latter mainly in summer, and it has other nutritive and protective qualities which render it particularly valuable as a food.

The consumption of milk in this country is far below what is desirable, and every opportunity should be taken to draw attention to the merits of milk as food, especially as an article of diet for children.

Typhoid in Yorkshire

In two ridings of Yorkshire epidemics of typhoid fever have occurred during the last few weeks. In the North Riding several cases were reported around Malton in the second week of October, and during the week ended Oct. 29th (Dr. H. Mason tells us) 78 cases were notified in this urban district. In the West Riding the little village of Denby Dale, near Huddersfield, was involved with a total up to Oct. 31st of 71 cases with 6 deaths. We are indebted to Dr. T. N. V. Potts, county medical officer, for an account of the origin and nature of this outbreak.

In every case, Dr. Potts writes, the infecting agent was found to be the *Bacillus typhosus*, and there appears to be little doubt about the original source of infection. A young woman, aged 21, returned from holiday in Scarborough towards the end of August. Her home is one of a group of houses situated on the hillside (Quaker Bottom) 500 yards or so above the Square Wood reservoir which supplies the village of Denby Dale, further down the valley. This woman was notified as suffering from typhoid fever on Sept. 17th, and between Oct. 8th and 20th 50 other cases occurred in the village.

Owing to the proximity to the reservoir of the house occupied by the original case, the local medical officer of health, Dr. J. T. Bleasdell, immediately became suspicious of a contaminated water-supply being the medium of infection and, along with the surveyor, he carried out a careful survey of the gathering ground. The Square Wood reservoir was constructed about 40 years ago and has a capacity of approximately two and a half million gallons. It draws its supply of water from eight or nine springs situated in a semicircular gathering ground, half a mile or so in diameter, immediately surrounding the reservoir, the springs being connected up with the latter by sundry underground pipe lines. There is another spring, the water from which flows down by the side of the reservoir, the resultant stream being known as the Munchliffe Dyke; and it appears that many years ago, upon the introduction of the water-carriage system into the group of houses referred to above, the sewage from these dwellings was connected up by drains with the Munchliffe Dyke. Following upon a careful examination of the sides of the dyke by the surveyor an opening into an old rubble drain was discovered, and after tracing this drain to the other end it was found to be communicating directly with the main spring supplying the reservoir, the contaminated water of the dyke being actually seen to be entering the communicating channel. The most likely explanation of the presence of this rubble drain is that the supply of water from the remaining springs was found to be occasionally inadequate, and for the purpose of augmenting the supply the Munchliffe Dyke was drawn upon. No doubt the existence of this channel between the Munchliffe Dyke and the nearby spring was not known to the persons who were responsible for connecting up water-closets and slop-closets to the dyke when the conversion of the houses to the water-carriage system took place. It does appear, however, that the inhabitants of Denby Dale village, numbering some 1400 persons, will have been drinking contaminated water for many years, and had it not been for the advent of the typhoid patient to the houses in Quaker Bottom, situated above the reservoir, it is likely that this tainted water would have continued to be consumed indefinitely.

The supposed infecting case was removed to hospital on Sept. 19th and the supply of water from the Square Wood reservoir was turned off on Oct. 13th. It has been noted that the great bulk of the cases were notified between Oct. 8th and 20th. The period of maximum infectivity of the water would be during the few days prior to the original patient going to hospital, although the risk of infection would continue until Oct. 13th, when the water from the reservoir was cut off. The foregoing sequence of events is consistent with the suggestion that the Scarborough case was the original source of infection. It was fortunate that the surveyor was able to connect up an alternative supply from the Rusby Wood reservoir. The latter is owned by the urban district council and is used for supplying a number of nearby parishes. No difficulty was experienced in finding the necessary hospital accommodation, and the cases have been sent to the infectious diseases hospitals at Penistone, Meltham, Kirkburton, and Huddersfield. The danger of further infection has disappeared with the cutting off of the infected water-supply, and only by disregard of ordinary preventive measures will any further risk be encountered. The department of the county medical officer at Wakefield has been busily engaged in coöperation with the local medical officer of health. Anti-typhoid vaccine has been supplied by the county department, and the necessary Widal reactions and water examinations have been made in the county laboratory.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 22ND, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 33 (last week, 12); scarlet fever, 2265; diphtheria, 1031; enteric fever, 79; acute pneumonia (primary or influenzal), 848; puerperal fever, 37; puerperal pyrexia, 103; cerebro-spinal fever, 19; acute poliomyelitis, 26; acute polio-encephalitis, 1; encephalitis lethargica, 7; dysentery, 8; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

Of the cases of small-pox, 24 were reported from the county of London, distributed among the metropolitan boroughs: Bethnal Green, Islington, and Southwark each 1; Stepney 2, Hackney 3, Poplar 16.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 25th–26th was as follows:—Small-pox, 65 under treatment, 4 under observation (last week 49 and 0 respectively); scarlet fever, 1926; diphtheria, 1720; enteric fever, 19; measles, 228; whooping-cough, 327; puerperal fever, 24 (plus 10 babies); encephalitis lethargica, 231; poliomyelitis, 6; "other diseases," 161. At St. Margaret's Hospital there were 15 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London there was no death from small-pox, 2 (0) from enteric fever, 5 (0) from measles, 6 (1) from scarlet fever, 11 (2) from whooping-cough, 21 (3) from diphtheria, 70 (22) from diarrhœa and enteritis under two years, and 50 (7) from influenza. The figures in parentheses are those for London itself.

Birkenhead and Liverpool each reported a fatal case of enteric fever. Diarrhœa was credited with 10 deaths at Liverpool, 4 each at Leeds, Manchester, and Birmingham. Liverpool reported 4 deaths from diphtheria.

The number of stillbirths notified during the week was 249 (corresponding to a rate of 39 per 1000 births), including 26 in London.

OBITUARY

ANDREW FREELAND FERGUS, M.D., F.R.F.P.S., LL.D. Glasg.

THE death of Dr. Freeland Fergus, the well-known ophthalmologist, was announced last week. It occurred on Oct. 24th at his residence, Fernycrag, Rothesay, in the seventy-fifth year of his age. He was the son of Dr. Andrew Fergus, of Glasgow, a well-known sanitarian and formerly president of the Royal Faculty of Medicine and Surgery, Glasgow.

Andrew Freeland Fergus was educated at the University of Glasgow, where he graduated M.B., C.M., in 1888. After holding several resident appointments he decided to make ophthalmology a specialty, and with that purpose studied under Snellen at Utrecht for a considerable period. On his return he was elected to the staff of the Glasgow Eye Infirmary and shortly afterwards to the Royal Infirmary, Glasgow. With these large fields of observation open to him he rapidly became a recognised authority in his subject. He translated Meyer's Diseases of the Eye, and published a certain number of sound papers in medical journals. At Anderson's College he was elected professor of ophthalmology, and lectured at the institution while he was also an examiner in ophthalmology at the Royal Faculty of Physicians and Surgeons, of which corporation he became President.

His public and professional work were equally distinguished. He was among the most energetic of those who promoted the existing machinery for the examination of the blind in Scotland, and became president of the Scottish National Federation of Institutions and Societies for the Blind. He was a medical referee under the Workmen's Compensation Act, and the locality of his activities gave him a fruitful opportunity for observing miners' nystagmus. His views on the treatment, and especially on the question of unfitness for work of the subjects of this disease, were clear-cut and valuable, and he became a recognised authority on the subject, collecting information from many sources in Europe and America. He wrote on the subject in THE LANCET, among other places, but he was not a frequent author, publishing only one small volume on elementary ophthalmic optics in 1903. During the war Prof. Fergus worked with great assiduity in examining the eyes of recruits and treating eye diseases among the soldiers, especially in the 4th General Scottish Hospital, and for these services he was officially commended. In addition to the appointments mentioned he was also president of the Glasgow Medico-Chirurgical Society, vice-president of the Glasgow Art Club, and president of the Royal Philosophical Society of Glasgow, of which institution he was for many years honorary secretary.

Dr. Fergus, who was unmarried, was the brother of Dr. John Fergus, who has also filled the presidential chair of the Royal Faculty; the two sons following in the steps of the father.

LAWRIE HUGH McGAVIN, C.B.E., F.R.C.S. Eng.

WE regret to announce the death of Mr. Lawrie McGavin, which occurred on Oct. 31st at Folkestone, in the sixty-fourth year of his age.

Lawrie Hugh McGavin was born in 1868, the son of Mr. John McGavin, of Calcutta. He was educated at Fettes College and Sandhurst, his original intention being to join the army. But in 1893 he entered Guy's Hospital as a student, obtained the English double qualification in 1898, and, after filling the usual resident appointments, became F.R.C.S. Eng. in 1890. At Guy's he held the post of surgical registrar, and later became surgeon to the Women's Hospital, Soho, and the North-West London Hospital. At the time of his death he was consulting surgeon to the Women's Hospital and the Dreadnought Hospital, Greenwich. During the war he held a number of hospital appointments, being surgeon to King George's Hospital, the Endsleigh Hospital for Officers, and the Michie Red Cross Hospital, while he was also a member of the final appeal board of medical assessors. For these services he was created C.B.E.

Mr. McGavin married in 1892 Edith Mary, daughter of the late Horatio Beauchamp, of Melbourne.

MEDICAL NEWS

Royal College of Physicians of London

At a comitia of the College on Oct. 27th, with Lord Dawson, the president, in the chair, Dr. H. C. Cameron, Dr. W. E. Hume, Sir Hubert Bond, and Dr. W. W. Jameson were elected councillors. The following were elected representatives of the College: Dr. H. Letheby Tidy as a member of the committee of management of the Conjoint Examining Board; Dr. Comyns Berkeley on the Central Midwives Board; Dr. J. H. Abram on the court of governors of the University of Liverpool; Dr. A. S. Barnes on the court of governors of Birmingham University; and Sir Stanley Woodwark on the Central Council for District Nursing. The president announced that Sir George Buchanan had been appointed Milroy lecturer for 1934, and that the Jenks memorial scholarship for 1932 had been awarded to Gerald Sutherland Irvine, late of Epsom College.

The FitzPatrick lectures on the Development of Neurology from the Commencement of the Nineteenth Century to the Present Time will be delivered by Dr. James Collier on Nov. 8th and 10th, and the Lloyd Roberts lecture on the Liberal Education of the Body by Prof. L. P. Jacks on Nov. 22nd, *all at 5* P.M.

The following candidates, having satisfied the Censors' Board, were elected to the membership:—

Ernest Henry Capel, M.B. Lond.; Paul Ward Farmer, Jnr., M.B. Melb.; Clifford Gordon Gordon-Wilson, L.R.C.P.; Harold Kingston Graham Hodgson, M.B. Durh.; Robert Dennis Harding, L.R.C.P.; Reginald St. Alban Heathcote, M.D. Oxf.; John Collinson Heather, M.B. Lond.; Henry Lovell Hoffman, M.B. Camb.; Henry Robert Holmes, M.B. Lond.; Max Honigsberger, L.R.C.P.; Harry Barlow Jackson, M.B. Lond.; Geoffrey Hales Jennings, L.R.C.P.; Rajmal Kasliwal, M.B. Lucknow; Eldon Munro Litchfield, L.R.C.P.; Herbert Geoffrey McComas, M.B. Lond.; Arthur Ian Granville McLaughlin, M.B. Sydney; Ian Gideon McLean, M.D. Melb.; Willson Alexander McTavish, M.D. Toronto; George Douglas Morgan, L.R.C.P.; Richard John Langford O'Donoghue, M.B. Lond.; Harold Anstruther Palmer, M.B. Manch.; Kallenkarai Narayana Pisharoty, M.B. Madras; William Gordon Robson, M.B. Edin.; David Paul Hannaford Schafer, M.B. Melb; Philip Graham Stock, M.B. Bristol; Ramaier Viswanathan, M.D. Madras; John Frederick Wilkinson, M.D. Manch.; and John Alan Bruce Young, M.B. Edin.

Licences to practise were conferred upon 130 candidates, 113 men and 17 women, who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College. The following are the names and medical schools of successful candidates:—

Mary-Ann C. Adams, Royal Free; R. M. Alford, St. Thomas's; J. C. G. Anderton, Camb. and Westminster; H. J. B. Atkins, Oxford and Guy's; R. H. Bailey, Camb. and King's Coll.; Helen Baker, Royal Free; N. J. Bakhru, M.B. Bombay, West London; J. B. Bamford, St. Bart.'s; P. Baron, M.B. Cape Town; S. A. Bather, Oxford and St. Mary's; T. P. Binns, Guy's; M. S. W. Bisdee, Tasmania and St. Mary's; E. N. Brockway, St. Thomas's; Doris B. Brown, M.B. Leeds; R. C. Brown, St. Thomas's; R. H. Brown, Camb. and Westminster; W. M. Capper, St. Bart.'s; P. K. Chanmugam, L.M.S. Ceylon, King's Coll.; E. M. Clark, St. Bart.'s; C. A. Clarke, Camb. and Guy's; C. C. Cobb, Oxford and St. George's; J. C. Colbeck, Guy's; N. C. Coombs, Camb. and Bristol; S. W. Cooper, St. Mary's; S. M. Cruz, Madras and Birmingham; A. R. Cutlack, St. Bart.'s; Joan M. C. Dancy, Royal Free; A. L. Davies, Middlesex; Doris A. Dean, Birmingham; R. A. Desai, M.B. Bombay, West London; Phyllis M. Dobbs, Camb. and Royal Free; Joan C. Drury, Camb. and Royal Free; Evelyn M. Eggleton, Univ. Coll.; G. M. Evans, Bristol; R. C. Evans, Univ. Coll.; J. Fishman, London; L. P. Fitch, St. Thomas's; Fanny C. Fraser, Royal Free; T. H. Gardener, London; D. W. Geidt, Guy's; W. G. Gill, Camb. and Guy's; J. A. S. Goonawardena, L.M.S. Ceylon, Univ. Coll.; W. B. Gough, M.B. Birmingham; E. H. B. Grey, London; H. C. P. Gunewardene, L.M.S. Ceylon, St. Bart.'s; B. P. Harris, Camb. and Middlesex; Augusta G. Harrison, Charing Cross; C. L. Hay-Shunker, Madras and St. Bart.'s; O. S. Heyns, Cape and Univ. Coll.; E. A. Hoare, St. Thomas's; Phyllis L. Holliday, Camb. and Leeds; H. D. Holt, Univ. Coll.; A. W. J. Houghton, St. Bart.'s; T. G. F. Hudson, St. Thomas's; Elizabeth M. Hutton, Royal Free; W. A. Hyslop, London; R. James, St. Mary's; N. D. Jekyll, Camb. and London; Ruby D. Johnson, Oxford and Univ. Coll.; W. H. Jones, Manchester; F. R. Kitchin, M.B. Liverpool; R. G. Knight, Camb. and Guy's; S. Levontin, London; B. S. Lewis, St. Bart.'s; W. Lewis, Camb. and Guy's; D. P. Lockhart, St. Thomas's; Barbara R. Lockwood, Royal Free; J. Lubran, Guy's; J. J. McCann, St. Thomas's; D. C. McClure, London; D. U. MacDonald, Leeds; M. B. McGinn, London; S. A. MacKeith, St. Mary's; V. S. Majmudar, M.B. Bomb., Birmingham; K. Malik, L.D.S. Eng., London; J. B. Maurice, Oxford and St. Mary's; I. R. W. Merrick, King's Coll.; C. J. Morgan, Cardiff and St. Bart.'s; F. P. Morgan, M.B. Melbourne; H. F. Moseley, Oxford and St. Thomas's; N. J. S. Nathan, Charing Cross; G. F. O'Connor, Camb. and Birmingham; Elizabeth M. Ogden, King's Coll.; G. Y. Oon, Charing Cross; M. W. L. Owen, Camb. and St. Mary's; R. Q. Parkes, Camb. and St. Thomas's; R. V. Payne, Camb. and Guy's; H. E. Pearse, Bristol; C. J. P. Pearson, St. Thomas's; G. E. Phillips, Cardiff; R. W. Pickering, Cape and Guy's; W. S. Pitt-Payne, L.M.S.S.A. Lond., Guy's; E. C. Powell, Guy's; F. J. P. Price, Cardiff and King's Coll.; R. G. Pulvertaft, Camb. and St. Thomas's; F. Ridehalgh, Camb. and Charing Cross; A. E. A. Ridgway, A.M.I.Mech.E., Charing Cross; B. F. B. Russell, St. Bart.'s; H. K. B. Rustogi, M.B. Lucknow, West London; V. M. Seifert, London; M. Shankla, M.B. Leeds; B. Sharma, M.B. Punjab, London; R. T. Shipman, St. Thomas's; S. C. Shore, Cape and Guy's; J. P. Singer, Camb. and Guy's; H. Singh, Punjab and Birmingham; V. C. Snell, Camb. and St. Bart.'s; W. H. C. Spooner, St. Mary's; E. J. Stubbs, Guy's; R. Sykes, Manchester, J. W. C. Symonds, St. Bart.'s; A. E. Terry, Leeds; Jessie A. Thirtle, Royal Free; H. H. Thompson, Manchester; J. R. Thornton, St. Thomas's; T. M. Tyrrell, Camb. and St. Thomas's; Patricia I. Unsworth, Liverpool; H. B. D. Vaughan, St. Bart.'s; C. B. M. Warren, Camb. and St. Bart.'s; W. H. C. Watson, Camb. and St. Thomas's; G. C. Welply, St. Mary's; J. H. West, St. Bart.'s; H. M. Williams, St. Bart.'s; H. V. Williams, Univ. Coll.; H. R. I. Wolfe, St. Thomas's; L. J. Wolfson, Guy's; T. G. R. Woods, St. Bart.'s; S. W. Wright, Guy's; H. W. Wykes, Middlesex; and K. E. L. Yuill, Birmingham.

Diplomas in Public Health were conferred (jointly with the Royal College of Surgeons) upon the following 15 candidates:—

N. D. Begg, R. Evans, J. Galea, P. Henderson, C. B. Huss, Dorothy M. James, E. T. James, H. N. C. van G. Kelaart, I. B. Lawrence, W. D. Lovelock-Jones, B. S. Nanjiani, T. St. M. Norris, J. A. D. Radcliffe, R. E. Robinson, and L. A. S. Trott.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—G. W. Aston, Univ. Coll. Hosp.; F. W. Baskerville, St. Mary's Hosp.; R. N. O'D. Burns, Univ. of Bristol; M. B. Chandulal, Hongkong and Univ. Coll. Hosp.; W. E. P. Corbett, St. Mary's Hosp.; C. H. Fagge, Univ. of Oxford and Guy's Hosp.; F. M. F. Forrest, St. Mary's Hosp.; A. J. McBrearty, Queen's Univ., Belfast; M. N. Mandelstam, Univ. of Witwatersrand and Middlesex Hosp.; J. W. Meyers, King's Coll. Hosp.; A. E. A. Ridgway, Charing Cross Hosp.; H. Shukry, Univ. of Cairo and Univ. Coll. Hosp.; and R. H. Wheeler, Univ. of Sheffield.

Medicine.—J. L. Bates, Guy's Hosp.; E. F. David, Univ. of Cologne and Royal Free Hosp.; J. O. Gordon, Middlesex Hosp.; J. Harris, Univ. of Witwatersrand and Middlesex Hosp.; E. J. Littledale, Guy's Hosp.; A. J. McBrearty, Queen's Univ., Belfast; S. Pugmire, Univ. of Liverpool; H. Shukry, Univ. of Cairo and Univ. Coll. Hosp.; and M. Sourasky, Charing Cross Hosp.

Forensic Medicine.—E. L. Burgess, King's Coll. Hosp.; J. L. Cope, Univ. of Cambridge and Westminster Hosp.; K. M. Hahn, Middlesex Hosp.; J. E. Morrish, St. Mary's Hosp.; S. Pugmire, Univ. of Liverpool; P. J. Purcell, St. Mary's Hosp.; H. Shukry, Univ. of Cairo and Univ. Coll. Hosp.; and B. K. Siddhante, Calcutta Med. Coll.

Midwifery.—F. M. F. Forrest, St. Mary's Hosp.; K. M. Hahn, Middlesex Hosp.; D. Kyle and P. J. Purcell, St. Mary's Hosp.; B. K. Siddhante, Calcutta Med. Coll.; and R. C. P. Thomas, St. Mary's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: R. N. O'D. Burns, M. N. Mandelstam, M. B. Chandulal, J. W. Meyers, C. H. Fagge, S. Pugmire, A. J. McBrearty, and A. E. A. Ridgway.

A Livery dinner will be given by the Master and Wardens of the society in the Apothecaries' Hall, Blackfriars, on Tuesday, Nov. 15th, at 7.30 P.M.

British Institute of Philosophy

Sir Arthur Eddington, F.R.S., will deliver an address on Physics and Philosophy at University College, Gower-street, London, W.C., at 8.15 P.M. on Tuesday, Nov. 15th. Tickets may be had on application to the director of studies, University Hall, 14, Gordon-square, W.C. 1.

University of London

At a meeting of the Senate on Oct. 26th it was decided that the title of the university chair of physiology at the Middlesex Hospital medical school should now be the John Astor chair of physiology. It has lately been announced that Major J. J. Astor, M.P., was the anonymous donor who endowed the chair with £20,000 in 1920.

In consequence of the gift of £1500 a year for seven years from the Prudential Assurance Company for the endowment of the chair of public health tenable at the London School of Hygiene and Tropical Medicine, it was decided that the chair should be known as the Prudential chair of public health for the duration of the gift.

The degree of D.Sc. in biochemistry was conferred on Dr. E. C. Dodds, Courtauld professor of biochemistry at the Middlesex Hospital medical school.

The University College Committee have elected Sir John Rose Bradford, F.R.S., as chairman in succession to Lord Chelmsford.

Sir Charles Sherrington, O.M., will deliver two lectures on Reflex Action, at University College, Gower-street, London, on Thursdays, Nov. 17th and 24th, at 5.30 P.M. No ticket is required for admission.

University of Manchester

Dr. A. N. Birkett has been appointed demonstrator in anatomy.

National University of Ireland

Dr. Walter Fallon has been appointed professor of medicine in University College, Galway.

Guy's Hospital

Dr. C. H. Rogerson has been appointed to the Sir Alfred Fripp memorial Fellowship in child psychology, tenable at Guy's Hospital.

National Institute of Industrial Psychology

Lord Macmillan has agreed to succeed Lord D'Abernon as president of this institute. Lord D'Abernon, who has had to resign owing to the pressure of other engagements, succeeded the late Lord Balfour in 1930.

The Place of Biology in Education

In connexion with the conference on this subject, to be held in London on Nov. 30th and Dec. 3rd (see THE LANCET, Oct. 29th, p. 977), a public meeting will be held at the Essex Hall, Essex-street, Strand, W.C., at 6.30 P.M. on Thursday, Dec. 1st. The subject of discussion will be Biology and Education, and the principal speakers will be Dame Helen Gwynne-Vaughan and Prof. A. C. Seward, F.R.S. No tickets are required.

Burton Infirmary Enlargement

Lady Evershed, wife of Sir Herbert Evershed, the chairman, recently opened extensions of Burton-on-Trent Hospital. The works now include a casualty department, an extension of the out-patients' department generally, an ear, nose and throat theatre, a clinic for social hygiene work, a new dispensary and secretarial offices, and a large X ray department. Three wards have been added, and the nurses' and staff quarters enlarged.

Conference on Mental Welfare

A conference on mental welfare will be held at B.M.A. House, Tavistock-square, London, W.C., on Dec. 1st and 2nd. At the first meeting, it is hoped, Sir Hilton Young, the Minister of Health, will open the proceedings; the chairman will be Sir Leslie Scott, and the subject of discussion Problems of Mental Health Work. At the second meeting, on Thursday afternoon, Sir Henry Brackenbury will take the chair, and Dr. R. Ashleigh Glegg will open a discussion on the Social Control of Feeble-minded Children leaving Elementary Schools. On Friday morning Mr. L. G. Brock, chairman of the Board of Control, will preside, and Mr. E. J. Lidbetter will speak on the Inheritance of Mental Deficiency. The last meeting will be devoted to School Retardation as a Factor in certain Conduct Problems of Childhood and Adolescence. Further particulars may be had from the secretary of the Central Association for Mental Welfare, 24, Buckingham Palace-road, London, S.W.1.

Hampstead General Hospital

At the opening of the third winter session of lectures at this hospital on Oct. 26th, under the chairmanship of Sir William Collins, an address was delivered by Sir Ernest Graham-Little, M.P., on the future of the voluntary hospital system. The lecturer gave the arguments, with figures, to support the following propositions: (1) that the voluntary hospitals are in a stronger position financially and morally at the present moment than at any time in recent history; (2) that they command a tradition of service and humane consideration which cannot be imitated by any institutions lacking their long organic growth; (3) that the administration of a voluntary system must be incomparably cheaper than that of any State-controlled system; and (4) that the functions of advancing teaching and research, discharged by the voluntary hospitals, cannot be supplied by institutions functioning under either State or municipal control. Sir Ernest found pessimism as to the future of the voluntary hospitals quite unjustified in the face of the figures quoted by the Prince of Wales at the meeting of the King Edward's Hospital Fund for London last June, which demonstrated the vastly improved position of the previous year; while he reminded the audience of the notable rebuilding operations carried out recently by the London, King's College, Middlesex, University College, Guy's, and St. Mary's Hospitals, solely upon voluntary subscriptions. Sir Ernest, regretting the attitude of the British Hospitals Association, considered that the acceptance of money derived from sweepstakes would be disastrous to the voluntary principle, and quoted a report of King Edward's Hospital Fund to prove that the voluntary hospitals are becoming largely a coöperative effort in which all classes of the community, including the patients, are joining. He closed with a demand for a drastic alteration of the medical curriculum, so that it may fit the needs more closely of the student who is ring general practice.

Annual Dinners

The annual dinner of the Royal Society of Medici will be held on Thursday, Nov. 17th, at the May Fair Hot London, W., Mr. Warren Low, the president, in the chair.

The annual dinner of the British College of Obst ricians and Gynæcologists will be held on Monday, Dec. 5 at Grosvenor House, London, W., at 7.30 P.M. At 3 P on the same day, H.R.H. the Duchess of York will [illegible] the ceremony in connexion with declaring open the Ho of the College, 58, Queen Anne-street, London, W.

The annual dinner of the Medico-Legal Society be held at the Holborn Restaurant, London, on Frid Dec. 9th, at 7 P.M.

The annual dinner of the Prince of Wales's H [illegible] will be held at the Trocadero Resta [illegible]., on Thursday, Nov. 24th, at 7.45 [illegible] with Dr. C. E. Sundell in the chair. The sec[illegible] is Dr. Bertram H. Jones, 47, Queen Anne-street, W. 1.

Liverpool Society of Anæsthetists

An ordinary general meeting of this society, with A. J. O'Leary, the president, in the chair, was held at David Lewis Northern Hospital, Liverpool, on Oct. Dr. I. W. Magill, of the Westminster Hospital, Lond gave a demonstration in blind nasal intubation thesia, and a short discussion followed.

The society was formed in July, 1930, and has a ship of 26 ordinary and 9 honorary members. hon. secretary is Dr. R. J. Minnitt.

New Hospital at Papworth

On Friday last Lady Baron laid the foundation-ston a hospital at this tuberculosis settlement. There wil accommodation for 84 in-patients, and the out-patie department will serve the whole of the village. The B hard Baron trustees have contributed £20,000 towards cost. The building has been designed by Mr. M manager of the building department of the settlement, Mr. Copsey, both of whom have been patients, and hospital will, as far as possible, be erected by skilled in the colony.

Nottingham General Hospital

The Lord Mayor of Nottingham, Alderman W. Gr has recently opened the new "W. G. Player Wing" Nottingham General Hospital, which replaces tempo huts erected in 1916. The entire cost, £23,000, has defrayed by Mr. Player, an anonymous donor has provi the equipment, and the linen has been paid for by the Guild. The new building, which is a male block, is of one-storey type, and is nearly 400 feet long. It two large and two small wards, with a total of 36 bed patients' day-room, a laboratory, and a clinical room other necessary accommodation.

Maternal Mortality Committee

This committee, whose chairman is Mrs. H. J. Tenn has arranged for a meeting at Friends House, Euston-r London, N.W., at 2.30 P.M., on Tuesday, Nov. 15th. L Iveagh, the hon. treasurer, will preside, and an add will be given by Sir Hilton Young, the Minister of Hea The committee came into existence about six years in order to bring the influence of all women to bear on question of maternal mortality. At the meeting, it is sta a resolution will be proposed pressing for improvem in the care of mothers before and after childbirth, an better standard of nursing and better training for doct It will also urge "the putting into force of all the serv for the protection of motherhood which the local authori can use, and which form the nucleus for that comprehens national maternity service which all in touch with moth hood are anxious to see established." Tickets may had from the secretary, Miss Tuckwell, C.H., 13, Ches terrace, S.W.1.

Harrow and Wealdstone Hospital

On Saturday afternoon last a performance of Mr. J. McCarthy's "If I were King" was given by the Trin College Dramatic Company, under the direction of F. G. Lloyd, at the New Scala Theatre, for the benefit the Harrow and Wealdstone Hospital, which celebrates t year the twenty-fifth anniversary of its opening. La Patricia Ramsay represented Princess Louise, who oper the hospital in 1907, and was to have been present on t "silver wedding" occasion had the weather not been unfriendly. The house was full of patrons of the hospi and college, who were warmly appreciative of the way which the piece was staged and played. At the conclusi Mr. Sydney Walton, as president of the hospital, express the thanks of the governors to the members of the ca and revealed an engagement of a permanent charact between two of the principal actors. The entr'acte mus conducted by Mr. Henry Geehl, was in keeping with t high level of the acting.

Grocers' Research Scholarships

To encourage original research in sanitary science the Grocers' Company offers scholarships of £300, tenable for one year and renewable for a further term, together with grants towards expenses. Particulars will be found in our advertisement columns.

Royal Photographic Society of Great Britain

An exhibition of cinematography will be held at the galleries of this society, 35, Russell-square, London, W.C., from Nov. 14th to Dec. 10th. An attempt will be made "to place before the public a comprehensive set of exhibits demonstrating the history of cinematography and its present-day applications." A series of evening meetings will be held during the exhibition, at which apparatus will be demonstrated and films projected. The one on Thursday, Nov. 24th, will be devoted to science, medicine, natural history, and research. Admission to the exhibition is free, and seats for the lectures can be reserved.

Enlargement of Worcester Infirmary

On Friday last the Prince of Wales opened extensive enlargements of this hospital, which have cost £60,000; the scheme, when completed, will have cost £90,000. The new works include an orthopædic block, a pathological laboratory, two theatres, and a nurses' home. The last-named, which is connected with the hospital by a covered passage, accommodates 62 nurses, and among its amenities is a hairdressing room. One of the rooms will be used as a coroner's court.

Ormond Maternity Trust

In aid of the advanced post-graduate courses in midwifery organised by this trust in connexion with the Queen's Institute of District Nursing, three lectures will be given in London during November. On Wednesday, the 9th, at 3.15 P.M., at 1, Cadogan-gardens, S.W., Mrs. Stanley Baldwin will preside, and Mr. L. Carnac Rivett, assistant obstetric surgeon to the Middlesex Hospital, will speak on the use of anæsthetics in midwifery. On Thursday, the 17th, at 5.30 P.M., at 25, Lennox-gardens, S.W., Miss Darbyshire, matron of University College Hospital, will give an address on the Report of THE LANCET Commission on Nursing. Both Miss Darbyshire and the chairman, Mr. Lister Harrison, were members of the Commission. The third lecture will be given at Queen's College, 43, Harley-street, W., at 5.30 P.M. on Thursday, Nov. 24th. Lady Salisbury will preside, and Dr. J. S. Fairbairn, president of the British College of Obstetricians and Gynæcologists, will speak on the Maternal Mortality Report. Tickets for the lectures may be had from Mrs. Bruce Richmond, 3, Sumner-place, London, S.W. 7.

The Government and Local Expenditure

In the absence of the Minister of Health, Mr. Geoffrey Shakespeare, Parliamentary Secretary to the Ministry, received on Oct. 31st a deputation from the Public Economy Association of South Wales and Monmouthshire, which represents almost all the industries in that district, local chambers of commerce, trade associations, and landowners. All the speakers stressed the decline of trade in South Wales since the war, and especially in the last two or three years. At the same time, they said, the expenditure of local authorities, both on capital and on revenue account, had greatly increased, and the burden on the depressed industries of the area was now so crushing that there was a real danger of collapse. The deputation suggested that the Minister of Health should refuse to sanction any further borrowing, except in cases of urgency, and even then only after careful inquiry into the future effect on local industry. He should also encourage, where possible, the conversion of outstanding loans to lower rates of interest, or, if necessary, obtain powers to this end. Thirdly, local authorities should be pressed to dispose of uneconomic trading undertakings to private enterprise. When the expenditure of a particular local authority was established to be grossly excessive, the Minister should supersede them and appoint a commissioner. In the course of his reply Mr. Shakespeare explained that the Government's policy was to restrict very severely the incurring of fresh capital expenditure on services not likely to be remunerative. The success of the conversion of war loan made it much easier for local authorities to convert their own loans on favourable terms. As regards trading undertakings run at a loss, it must be recognised that it might sometimes be difficult to induce private enterprise to take them over. The suggestion to appoint commissioners implied, of course, a fundamental break with the traditions of English local government; there had been a temporary power—which had been exercised in a few cases—to appoint commissioners for poor-law purposes, but this had now lapsed.

The Infants Hospital

On Monday last H.R.H. the Princess Royal, president of the hospital, opened the new out-patient department in Bentinck-street, Westminster, part of a much-needed extension scheme which has been made possible principally by the generosity of Sir Gomer Berry, the chairman, and Sir Robert Mond, the treasurer and founder. The new department, which was described in our issue of Oct. 8th (p. 810), is constructed on modern lines, with medical, surgical, ophthalmological, dental, and ear, nose, and throat consulting-rooms, and a well-equipped operating theatre for minor operations. There are also special rooms for X ray work, light treatment, and massage, and a large waiting hall with a refreshment bar adjoining. On the top floor of the building, but wholly disconnected from the out-patient department, there will be a fully equipped milk laboratory with dietetic kitchen, and in the basement there will be five isolation rooms for out-patients, a pathological laboratory, a post-mortem room, and a mortuary and chapel. It is hoped that a new in-patient block, which will raise the number of beds from 50 to 100, will be ready by the middle of next year. This block will include private wards for paying patients, special wards for nursing mothers, a complete operating theatre suite and administrative offices.

Appointments

London County Council: RAE, L. J., M.B., B.Ch., Radiologist, St. Nicholas' Hospital. MONTGOMERY, S. K., M.D. Lond., Radiologist, Hammersmith Hospital.

Vacancies

For further information refer to the advertisement columns

Barrow-in-Furness County Borough.—Asst. M.O. £500.
Bedford County Hospital.—Second H.S. At rate of £140.
Belgrave Hospital for Children, 1, Clapham-road, S.W.—Asst. Surgeon. 50 gns.
Bolingbroke Hospital, Wandsworth Common, S.W.—Clin. Asst., Ear, Nose, and Throat Dept. £100.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Brighton, Royal Alexandra Hospital for Sick Children.—H.P. £100.
Bristol Royal Infirmary.—Hon. Physician.
Burton-on-Trent General Infirmary.—Cas. O. and H.P. Each £150.
Evelina Hospital for Sick Children, Southwark, S.E.—Physician to Out-patients.
General Register Office, Somerset House, W.C.—Medical Statistical Officer. £833.
Grocers' Company, Grocers' Hall, E.C.—Three Research Scholarships. Each £300.
Herefordshire General Hospital.—Hon. Surgeon.
Hôpital et Dispensaire Français, 172, Shaftesbury-avenue, W.C. Jun. Res. M.O. £100.
Hull Municipal Maternity Home and Infants Hospital.—Jun. Res. M.O. £100.
Hull Royal Infirmary.—Res. Cas. O. £200.
Leicester Royal Infirmary.—Res. Asst. Anæsthetist. At rate of £250.
London Hospital, E.—First Asst. and Reg. £300. Also First Asst. to Gynæcological and Obstetrical Dept.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester Babies' Hospital, Burnage Lane, Levenshulme.—Sen. Res. M.O. At rate of £125.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Asst. Cas. O. At rate of £125.
Oldham Royal Infirmary.—H.S. At rate of £175.
Plymouth, South Devon and East Cornwall Hospital.—H.P. and H.S. At rate of £120 and £100 respectively.
Preston, Lancs, Biddulph Grange Orthopædic Hospital.—Sen. H.S. Also Jun. H.S. At rate of £250 and £150 respectively.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate of £225.
Royal Dental Hospital of London, Leicester-square, W.C.—Two House Anæsthetists. 10*s.* 6*d.* per session. Also Hon. Asst. Anæsthetist.
Royal Free Hospital, Gray's Inn-road, W.C.—First H.P., Surg. Reg. £200. Also Half-time Med. Reg. At rate of £100.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. H.S. for Country Branch. At rate of £150.
Royal Northern Hospital, Holloway, N.—Med. Reg. £100. Also H.P. At rate of £70.
Southend-on-Sea General Hospital.—Third Hon. Anæsthetist.
Sudan Medical Service.—M.O. £E.720.
Tilbury Hospital.—Med. Supt. £200.
Willesden General Hospital, N.W.—Cas. O., H.S., and H.P. All at rate of £100. Also Hon. Med. Staff Ophth. Surgeon.
Worcester General Infirmary.—Third Res. M.O. £120.
York County Hospital.—H.P. £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Porlock (Somerset).

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 8th.—5 p.m., Therapeutics and Pharmacology. Paper: Dr. E. P. Poulton: The Nature of the Action of Insulin and Some Results with High Carbohydrate and Low Fat Diet. 8.30 p.m., Psychiatry. Dr. Henry Devine: The Problem of Schizophrenia. (Presidential address.)

Friday.—5.30 p.m., Clinical. (Cases at 4.30 p.m.) Cases: Dr. H. V. Morlock: 1. Hæmopneumothorax. Prof. J. M. Woodburn Morison: 2. Myelomata Successfully Treated With X Rays. Dr. Terence East: 3. Hypertrophic Osteo-arthropathy. Dr. Philip Ellman: 4. Angina Pectoris with Recent Coronary Thrombosis, Infarction, and Cardiac Aneurysm. 5. Pulmonary Tuberculosis Treated with Insulin. Dr. Geoffrey Konstam: 6. Pre-gangrenous Changes in a Finger Due to Senile Arterial Degeneration. 7. Ophthalmoplegic Migraine. Dr. C. Newman: 8. Subconjunctival Hæmorrhage with Splenic Enlargement. Other cases will be shown. 8.30 p.m., *Ophthalmology*. (*Cases at 8 p.m.*) Paper: Mr. E. D. D. Davis: Three Cases to Illustrate Modified Toti's Operation for Lacrymal Obstruction, with X Ray Photos of Dilatation of the Lacrymal Sac Reinforced by the Injection of the Sac with Lipiodol. Cases will be shown.

HARVEIAN SOCIETY OF LONDON.

Wednesday, Nov. 9th.—8.30 p.m. (at Paddington Town Hall), Prof. Grey Turner: "Nil Desperandum."

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, S.W.

Wednesday, Nov. 9th.—9 p.m., Dr. J. A. Torrens: Consideration on the Treatment of Certain Common Medical Conditions.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

Thursday, Nov. 10th.—8.30 p.m., Dr. J. S. Fairbairn: Psychology in Gynæcological and Obstetric Practice, followed by Dr. Marjory Edwards and other speakers.

PADDINGTON MEDICAL SOCIETY.

Tuesday, Nov. 8th.—9 p.m., in the Great Western Royal Hotel, Paddington. Dr. Ernest Jones: The Significance of Psycho-analysis in Modern Medicine.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

Friday, Nov. 11th.—Dr. Donald Paterson: Some Advances in Pædiatrics.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

Tuesday, Nov. 8th, and following Thursday.—5 p.m., Dr. James Collier: The Development of Neurology from the Commencement of the Nineteenth Century to the Present Time (FitzPatrick Lectures).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

Monday, Nov. 7th.—5 p.m., Mr. R. Davies-Colley: Tumours of the Jaw (Museum demonstration).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Nov. 7th, to Saturday, Nov. 12th.—Medical Society of London, 11, Chandos-street, Cavendish-square, W. Series of Lectures on Renal Disease. Tues., at 4 p.m., Lecture by Dr. A. Arnold Osman on Nephritis and Nephrosis. (Free to Members.)—West End Hospital for Nervous Diseases, 73, Welbeck-street, W. A Course in Neurology daily at 5 p.m.—Royal Waterloo Hospital, Waterloo-road, S.E. A Course in Medicine, Surgery, and Gynæcology. Nov. 7th to 26th. Afternoons and some mornings.—Hospital for Consumption, Brompton, S.W. A Course in Practical Pathology dealing with Laboratory Methods and the Interpretation of Results. Thurs., at 11.45 p.m. Limited to 6.—10, Bedford-square, W.C. Clinical Pathology Demonstration by Dr. A. Knyvett Gordon on Wed., at 8.30 p.m. (specially suitable for M.R.C.P. candidates), on Splenic Enlargement.—These Courses are open only to Members of the Fellowship of Medicine.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, Nov. 7th.—2 p.m., Dr. Riddoch: Out-patient Clinic. 3.30 p.m., Dr. Kinnier Wilson: The Motor System.

Tuesday.—2 p.m., Dr. Walshe: Out-patient Clinic. 3.30 p.m., Dr. Martin:

Wednesday.—2 p.m., Dr.
3.30 p.m., Dr. Collier:

Thursday.—2 p.m., Dr. Kinn
3.30 p.m., Dr. Kinnier

Friday.—2 p.m., Dr. Adie:
Dr. Bernard Hart: Psychoneuroses.

WEST LONDON HOSPITAL POST-GRADUATE
Hammersmith-road, W.

Monday, Nov. 7th.—10 a.m., Skin Department, Surg Wards. 2 p.m., Eye and Gynæcological Out-patients 4.15 p.m., Lecture, Mr. Sinclair: Gastric and D Ulcers.

Tuesday.—10 a.m., Medical and Surgical D
2 p.m., Throat, Nose, and Ear Out-patients. 4.15 p.m. Lecture, Dr. Ironside: The Nervous System.

Wednesday.—10 a.m., Medical Wards, Children's Out patients. 2 p.m., Eye Out-patients. 4.45 p.m., V. Diseases Demonstration.

Thursday.—10 a.m., Neurological Out-patients, Demonstration. 2 p.m., Eye and Genito-urina Out-patients. 4.15 p.m., Lecture, Mr. Davenport Injuries to the Eye.

Friday.—10 a.m., Medical Wards, Skin D
2 p.m., Throat, Nose, and Ear Out-patients. 4.15 p.m. Lecture, Dr. Ironside: The Nervous System.

Saturday.—10 a.m., Medical Wards, Children's Out patients, Surgical Wards.

Daily, 2 p.m., Operations. Medical and Surgical Out patient Departments.

The lectures at 4.15 p.m. are open to all medical without fee.

HAMPSTEAD GENERAL AND NORTH-WEST LOND HOSPITAL POST-GRADUATE SCHOOL.

Wednesday, Nov. 9th.—4 p.m., Mr. A. Clifford Morson Psychological and Clinical Results of Division of Vas Deferens.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL
Gray's Inn-road, W.C.

Friday, Nov. 11th.—4 p.m., Mr. F. Watkyn-Thomas Lateral Sinus Thrombosis.

ST. PETER'S HOSPITAL FOR STONE, POST-GRADUA COURSE, Henrietta-street, Covent Garden, W.C.

Wednesday, Nov. 9th.—3 p.m., Dr. J. Roth: Uro-radiological Investigations.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

Wednesday, Nov. 9th.—4.30 p.m., Mr. Kenneth Walk Past, Present, and Future of Transurethral Prosta tomy.

LONDON SCHOOL OF DERMATOLOGY, St. John's H
49, Leicester-square, W.C.

Tuesday, Nov. 8th, and following Thursday.—5 p Dr. A. Whitfield: Tuberculosis Cutis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL
Denmark-hill, S.E.

Thursday, Nov. 10th.—9 p.m., Dr. J. A. Drake: E and its Treatment.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION
St. James' Hospital, Ouseley-road, Balham, S.W.

Wednesday, Nov. 9th.—4 p.m., Dr. W. J. O'Donovan Dermatological Statistics.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-s
W.C.

Wednesday, Nov. 9th.—4 p.m., Dr. H. Crichton- Prevention of Mental Disorders.

Thursday.—4 p.m., Dr. R. G. Gordon: Phy Basis of Mental Deficiency.

MANCHESTER HOSPITAL FOR CONSUMPTION AN DISEASES OF THE THROAT AND CHEST, Hardman street, Deansgate.

Wednesday, Nov. 9th.—4.30 p.m., Mr. Victor Lambert Ulcerative Conditions of the Pharynx.

ANCOATS HOSPITAL, Manchester.

Thursday, Nov. 10th.—4.15 p.m., Dr. A. Renshaw: Investigation of Pyrexia.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

Wednesday, Nov. 9th.—4.15 p.m. (at the Royal Infirmary) Dr. John Henderson: Medical Cases.

MANCHESTER ROYAL INFIRMARY.

Tuesday, Nov. 8th.—4.15 p.m., Dr. D. Dougal: Pregnancy in Relation to General Diseases.

Friday.—4.15 p.m., Mr. W. R. Douglas: Demonstration Surgical Cases.

Births, Marriages, and Deaths

BIRTHS

Grant.—On Oct. 27th, 1932, at the Mothers' Hospital, Lowe, Clapton-road, to Florence Margaret Grant (née Gamble) M.D., M.R.C.P., wife of Arthur Stanley Grant, of 306, St. James-court, Buckingham Gate, S.W.1—a son.

MARRIAGES

Tuckett—Thompson.—On Oct. 22nd, 1932, at Cobham, Cedric Ivor Tuckett, M.Chir., to Lettice Charlotte, younger daughter of Mr. and Mrs. W. Graham Thompson.

DEATHS

Black.—On Oct. 25th, at a nursing home, Tunbridge Wells, Dr. Arthur Campbell Black, aged 66.

Fergus.—On Oct. 24th, suddenly, at Ferncrag, Rothesay, Andrew Freeland Fergus, M.D., LL.D., F.R.F.P.S. Glasg., eldest son of the late Andrew Fergus, M.D., M.R.C.S. in his seventy-fifth year.

McGavin.—On Oct. 31st, at Folkestone, Lawrie Hugh McGavin, 63.

Nicholson.—At Ryde, Thom M.B., &c., in his seventy-first year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Ottawa Agreements Bill

On Thursday, Oct. 27th, the Ottawa Agreements Bill was read a second time in the House of Commons by 423 votes to 77.

Ottawa and Cod-liver Oil

On Monday, Oct. 31st, the House of Commons considered in Committee the Ottawa Agreements Bill. Sir Dennis Herbert, Chairman of Committees, was in the chair.

Mr. George Hall moved an amendment to exclude cod-liver oil, castor oil, cocoanut oil, and certain other oils from the scheduled duties. He said that cod-liver oil was in use in almost every working-class household in this country, especially where there were young children, and local authorities spent considerable sums in purchasing bulk supplies for hospitals and sanatoria. Those authorities were concerned as to the increase in price which would result from this new imposition, and they considered that they ought not to be asked to pay an increased price for this commodity for the purpose of encouraging the cod fishing and cod-liver oil industry in Newfoundland. The Opposition would take every possible opportunity of doing their utmost to prevent the enforcement of this duty, which might be described as an imposition on the invalid and the cripple.

Mr. Mallalieu, in supporting the amendment, said he associated himself with everything that Mr. Hall had said on the question of a rise in the price of cod-liver oil. It was suggested that if there was any rise in price it would be insignificant. But it seemed to be quite forgotten that this was a time of falling wages, and small amounts added up considerably in the aggregate.

Mr. H. G. Williams said that they were told that Newfoundland oil was not good enough for medicinal purposes. Two or three years ago Prof. Drummond, of University College, London, and Prof. Hilditch, of the University of Liverpool, were invited by the Empire Marketing Board to make an authoritative report on supplies of cod-liver oil in the British Empire. In page 114 of that report its authors wrote as follows:—

> "At the present moment a considerable proportion of the cod-liver oil sold in this country is of relatively low medicinal value, largely because the pharmaceutical trade has a preference for the pale oils—mainly of Norwegian origin. In some cases, these oils are sold with a guarantee of vitamin activity that is virtually worthless, as the figures or 'units' given are often based on unreliable methods of testing."

This was the oil which the Liberal Party wanted people to consume. In pages 124–5 these scientific gentlemen, who had really been intimate with the subject, stated this as their conclusion:—

> "Of the oils from the important cod areas studied, those from Newfoundland were found to be of richest vitamin potency. Next in order of merit came those of Icelandic origin. The oils from Scotland were found to be intermediate in value between the rich Newfoundland oils and the much poorer class of oils of Norwegian origin."

In view of authoritative statements like that it was really time that that section of the Liberal Party which was opposing this Bill should abandon the vote-catching device of trying to terrify electors by saying that the health of their children was going to be imperilled. He really asked these gentlemen to drop this campaign, which was not creditable to a party with great traditions.

Dr. Burgin (Parliamentary Secretary to the Board of Trade), replying for the Government, said that they were passing through a period of extremely low prices, and consequently it was possible by arithmetic to make the cod-liver oil duty appear to be a very high ad valorem figure. That was quite a fallacious argument, because the existing price level was far too low. The ordinary method under which medicinal cod-liver oil was sold in a retail chemist's establishment was in an 8-ounce bottle. Taking the duty at the level proposed by the Ottawa agreements, it would work out at a penny on an 8-ounce bottle, but there was no reason why the penny on an 8-ounce bottle should be passed on to the consumer at all. Including the duty, the cost price of the oil was 4*d.* per 8-ounce bottle, and this was sold over the counter at 1s. 6*d.*

Sir S. Cripps: Will the hon. gentleman give an undertaking on behalf of the Government that steps will be taken to see that no addition to the price is made?

Dr. Burgin said that the hon. and learned gentleman knew perfectly well that he could give no such undertaking. Members of the Committee were susceptible to the arguments based on the figures he had given.

The amendment was rejected by 266 to 61—majority 205.

HOUSE OF COMMONS

WEDNESDAY, OCT. 26TH

Medical Treatment of Disabled Men

Mr. Smedley Crooke asked the Minister of Pensions whether he was aware that disabled men were being refused treatment by the Ministry for the disease which had at one time been accepted as attributable to service, and whether he would see in cases of attributable disability that treatment was at all times available for disabled men.—Major Tryon replied: Wherever it is established that the present condition of a previously accepted disability, whether attributable to or aggravated by war service, is due to such service, any special course of treatment certified to be necessary is provided.

Physically and Mentally Defective War Orphans

Mr. Smedley Crooke asked the Minister of Pensions whether he would inform the House of the number of physically or mentally defective war orphans over the age of 21 who were still receiving allowances from the Ministry of Pensions.—Major Tryon replied: The number of these cases in receipt of allowances at the end of September last was 87.

National Health Insurance

Mr. Buchanan asked the Minister of Health the names of the members of the consultative committee of approved societies which were consulted on the National Health Insurance and Contributory Pensions Act recently passed.—Mr. Shakespeare (Parliamentary Secretary to the Ministry of Health) replied: The proposals which were embodied in the recent National Health Insurance and Contributory Pensions Bill were submitted to the Consultative Council on National Health Insurance (Approved Societies Work) as a whole. The proposals were approved by the Council as a whole, and the consultation did not take the form of eliciting the views of each individual member, though all members were at liberty to express their views at the meeting when the proposals were under consideration. The proceedings of the consultative council have always been treated as confidential.

Fatal Road Accidents

Sir Bertram Falle asked the Minister of Transport what steps his department had taken since the beginning of the recess to diminish the loss of life from the total of 450, or more, persons per month arising out of road accidents.—Mr. Pybus replied: During the recess I have, in conjunction with the Home Office and the police, brought to their final stage the arrangements for a special investigation of the causes of fatal road accidents over a period long enough to give definite and reliable results. A form of return suitable for mechanical tabulation has been prepared for use by all police forces in reporting fatal accidents. I believe that by a more complete diagnosis of the causes of fatal accidents it will be possible to devise more effective methods to reduce their number.

THURSDAY, OCT. 27TH

School Meals and Unemployment Relief

Mr. Hicks asked the Minister of Labour whether he was aware that the London County Council, in assessing the means of applicants for transitional benefit, took into account the value of meals given at school to children; whether this was the usual practice of public assistance authorities; and, if so, whether this practice was approved by his department.—Sir Henry Betterton replied: I understand that regard is had to the value of these meals in the London County Council area and that this is commonly, though not universally, the practice elsewhere. As the same practice is followed by the London authority in dealing with applications for public assistance, their procedure is in conformity with the requirements of the Order in Council governing transitional payments.

Fatality in a Poor-law Institution

Mr. Pickering asked the Minister of Health whether his attention had been called to the case of Reuben Gilbert, an inmate of the Leicester poor-law institution, who died as the result of slipping on the polished floor, and to the fact that, although there had been several other fatalities previously from the same cause, the floors of the institution were still polished, in compliance with the orders of the Ministry of Health; and whether, in view of these facts, he would inquire into the matter generally and do all that was possible to remove such a danger, especially to the aged and infirm inmates.—Sir E. Hilton Young replied: This inmate was an old man, unable to get about by himself, and was at the time of the accident being assisted by an officer. The inmate did not, as I understand, blame the officer or make any complaint to the authority of the state of the floor, and it is questionable whether the accident was due to that cause. On the general question, I have not made any order on the subject, but I am advised that polished floors have advantages on medical grounds. A dangerously high polish should obviously be avoided, and I am instructing my inspectors to bring this point as occasion offers to the notice of local authorities.

Maternal Mortality

Mr. Lunn asked the Minister of Health what steps he was taking to implement the recommendations in the report of the departmental committee on maternal mortality.—Sir E. Hilton Young replied: So far as the work of local authorities is concerned, the final report of this committee confirms the recommendations made in their interim report which were communicated to those authorities, and on which action has already been taken in many districts. I have recently taken steps to secure the continuance of the system of confidential inquiries into the circumstances of maternal deaths in accordance with the recommendation of the committee, and I am considering what further action can most usefully be taken.

Health Insurance and Poor-law Assistance

Mr. Buchanan asked the Secretary for Scotland if he had made inquiries into the question of the director of public assistance in Glasgow and the public assistance committee continuing to defy the law relating to health insurance in the taking into account of the first *7s. 6d.* of health insurance benefit for poor-law purposes; and if he intended to take any action to have the law carried out.—Sir Godfrey Collins replied: The Department of Health for Scotland have made representations to the poor-law authority of Glasgow in cases where it appeared that the statutory provision referred to was not being observed. The amount of relief to be afforded in an individual case is, however, a matter for the poor-law authority, subject to the individual recipient's right of appeal on the ground of inadequate relief.

Silicosis and Asbestosis

Mr. Jamieson asked the Home Secretary the number, down to the last convenient date, of persons employed in the asbestos industry who had been medically examined in pursuance of the Silicosis and Asbestosis (Medical Arrangements) Scheme in England and Wales and Scotland, respectively; the total amount paid by employers to the Medical Expenses Fund in respect of such examinations; and the number of persons certified by the medical board as totally disabled or suspended from employment as suffering from asbestosis.—Sir J. Gilmour replied: Since June 1st, 1931, when the Silicosis and Asbestosis (Medical Arrangements) Scheme came into force, 1535 workmen have been examined under the scheme in the asbestos industry in England and Wales, and 80 in Scotland. The total amount paid by employers to the Medical Expenses Fund in respect of these examinations is £2300. Certificates of total disablement or suspension on account of asbestosis, or asbestosis accompanied by tuberculosis, have been issued in 30 cases in England and Wales, and 2 cases in Scotland.

Mr. Jamieson: In view of the large expense incurred by employers and the small number of men found to be unfit for work, will the right hon. gentleman consider rescindi or modifying this scheme?

Sir J. Gilmour: No, Sir. I think that this new experiment is fully justified. Of course, it is true that it require very expert examination, but it may be that the cost will b materially reduced in the future.

Lieut.-Commander Agnew: Is the right hon. aware that in the case of tin mining the scheme oper to the disadvantage of both employers and employees especially as the latter cannot get employment?

Sir J. Gilmour: I think it is too early to make assertion of that kind.

Defective Eyesight of Juveniles

Mr. Lovat-Fraser asked the Minister of Health if attention had been called to the report of the recent gation by the Ministry of Labour into the question unemployment among boys and girls under the age of 18 in which it was stated that the chief defect in both was poor eyesight; and if he would inquire into the cau of this evil with a view to counteracting it.—Sir E. Hilto Young replied: The report to which my hon. friend indicates the importance of the preservation of eyesigh and the prevention of blindness, and my hon. friend w be aware of the work which is already being done in direction under the maternity and child welfare and schoo medical services. The whole problem is at present the consideration of two committees, one of which appointed by the Board of Education, and I will for this report to be brought to their notice.

TUESDAY, NOV. 1ST

Outbreak of Typhoid at Malton

Mr. Turton asked the Minister of Health how many of typhoid had been discovered at Malton to date; th present condition of the patients; where these were treated; and whether the cause of the outbreak had located.—Mr. Shakespeare (Parliamentary Secretary the Ministry of Health) replied: 88 cases of typhoid are known to have occurred at Malton up to and Oct. 30th. My right hon. friend is unable to say any about the condition of individual patients, except tha three of the patients have died. Patients are being in the fever hospitals at York and Driffield and in cottage hospital at Malton, which has been appropriated for the purpose. As my right hon. frien is at present advised, the infection appears to have be water-borne, but he will communicate further with my friend when he has received the report of his medical who has been investigating the outbreak.

Clapham Maternity Training Hospital

Mr. Denville asked the Minister of Health if any tests were imposed on pupils who were training in Clapham Maternity Training Hospital.—Mr. Shakespe replied: My right hon. friend has no information on point raised by my hon. friend. I should perhaps add my right hon. friend's concern is solely with the effic of the training given in such an institution.

THE SERVICES

ROYAL ARMY MEDICAL CORPS

Lt.-Col. E. H. M. Moore, having attained the age compulsory retirement, is placed on retd. pay.

Maj. A. L. Stevenson to be Lt.-Col.

TERRITORIAL ARMY

Capt. D. Lamont resigns his commn.

Lt. J. Wright to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. C. H. J. Fagan and Majs. C. E. K. Herapath and J. C. Marklove, having attained the age limit, relinquish their commns. and retain their rank.

Maj. A. S. Hebblethwaite, from the Active List, to be Maj.

Capt. D. E. Core, having attained the age limit, relinquishes his commn. and retains his rank.

INDIAN MEDICAL SERVICE

Col. E. A. Walker to be Maj.-Gen.

Lt.-Col. E. W. C. Bradfield to be Col.

Lt. (on prob.) D. P. Mitra to be Capt. (on prob.).

Surg. Lt.-Comdr. E. O'Reilly and Capt. J. S. B. Forde to be Capts. (on prob.).

J. W. Bowden and W. Mackie to be Lts. (on prob.).

Maj.-Gen. C. Hudson retires.

Capt. A. K. Menon relinquishes his temp. commn.

NOTES, COMMENTS, AND ABSTRACTS

MENTAL AFTER-CARE

A MEETING of the Mental After-Care Association was held at Springfield Mental Hospital on Oct. 25th, the chair being taken by the President, Lord WAKEFIELD OF HYTHE, who emphasised the fact that the work of the Association was one of salvation, not salvage, since mental disease was curable. The most important thing about the treatment of mental illness was its increasing success. He appealed for funds, and supported his own appeal by wiping off the overdraft of £579. After the Dean of WESTMINSTER had spoken in moving terms of the religious aspect of the work, Miss RUTH DARWIN described after-care work in America. In America there was a readiness to recognise mental illness and no tendency to regard it as a bugbear. People were much more prompt in seeking advice, and young social and medical workers were keen to work on the mental health side. Inevitably this attitude was associated with much superficial psychological talk and with too great eagerness to run to a psychiatric out-patient clinic with the children. In New York State there was a hospital for 6000 mental patients and a new one for 10,000 was being built. There was also a special bureau for social work in the 20 mental hospitals of the State. As a general rule one social worker was added for every hundred patients on parole. Five main aims could be distinguished: (1) to help the doctor in diagnosis and treatment by providing information; (2) to help the patient by coming directly into touch with the home surroundings, and by doing things that had been left undone because of a sudden departure; (3) to help the family to understand what the mental illness of the patient had meant and to wipe out soreness, anger, and irritation; (4) to prepare the way for the patient's return; (5) to help the patient to remain out when once out on parole or recovered. The number of patients able to go out and the length of time they stayed out depended very largely on the number and skill of the social workers.

Attached to the hospitals were community clinics, which met periodically. Here cases were referred from the courts and schools. In the hospital itself was a social service office where all cases were registered, and a central exchange bureau in New York supplied information about the families. The social worker saw each patient in the ward and paid a home visit, and further visits were paid as required. The office was always open on Sundays, as that was the day on which the relatives most often called. One medical officer was in charge of the parole patients who had to report month by month at a clinic. The social workers acted as technical assistants to the doctors attending the medical case conferences. The work was thorough and well organised, and yet was done without over-elaboration of reports in psychological detail. The workers were paid members of the staff and were highly trained. The correlation of knowledge of the home with knowledge of the patient in hospital was a great asset. The work of the Mental After-Care Association had been studied by American visitors before the work over there had been initiated. The need for such work was great and was not only a question of common humanity, but also of common sense.

AFTER-CARE IN LONDON

Mr. E. J. SAINSBURY (chairman of the L.C.C. Mental Hospitals Committee) spoke with high appreciation of the work of the Association. During its 40 years of life, he said, it had extended in every possible way, both in magnitude and in character. In every L.C.C. mental hospital it was called on for a report of home conditions which were of vital importance to the welfare of patients released on trial or discharged. It was useless to send a patient back to a home which would involve him or her in such stress that another collapse was inevitable. No official inquiry could reach the depths plumbed by the Association's workers, and he hoped the time would never come when the L.C.C. would set up a department to take over the work. To have it said by a neighbour, "I saw the County Council inspector at your house yesterday," was to damn the whole effort to help. When there were no friends to help or home fit to go to, the Association stepped in again with its convalescent hospitals. The Association acted as the County Council's almoners and often had to incur additional expenses—a difficulty which the L.C.C. was trying to meet. Patients on trial were visited at home and reports on progress and advice were sent to the authority, the advice invariably being accepted and that over very long periods. The work was of the utmost value to the London County Council. Now that voluntary patients could be received, the Association were taking these cases under the same conditions as they took certified ones. It was in the early stages that the greatest care was required and clinics had been set up throughout London. In these also the Association helped. During the first six months of 1932, preliminary inquiries had been made by the Association in 526 cases; 117 patients had been received into hostels, work had been found for 35 discharged patients, and another 127 had been helped in various ways. In addition, 21 voluntary cases had been taken into hostels, work had been found for 8, and 22 others had been helped. The total was nearly 900 for the six months. Mr. Sainsbury concluded with one or two "human documents" to illustrate the work which was so greatly valued by his Council. He was most grateful of all, he said, for the succour given to young girls who were homeless and friendless.

Mr. C. L. DE SALIS (chairman of the Springfield Mental Hospital Committee) welcomed the Association to Springfield, and said that in Middlesex also they found the Association most helpful. Its good offices were being used more and more, and especially in connexion with the out-patient clinics. Many patients could be sent to hostels from these clinics instead of to mental hospitals. The accounts were in rather a gloomy state; a great deal of money must be provided by voluntary contributions if the work was to go on and to increase. He hoped that the work would always be on a voluntary basis, and that it would never become officialised. People seemed to be far readier to help hospitals than to help after-care. There should be a representative of the Association in every parish, for people must be educated to the fact that mental disease was curable.

Dr. REGINALD WORTH (medical superintendent, Springfield Mental Hospital, and chairman of the Association), in thanking the chairman and speakers, emphasised the voluntary standing of the Association.

FUTURE OF HYGIENE IN THE FAR EAST

IN his Chadwick lecture, delivered in London on Tuesday last, Prof. Kielstra, of Leiden, said that the old theory that "the native is crusted with prejudice" could no longer be regarded as a sufficient explanation of his aversion and indifference to modern hygienic and medical treatment. More thorough investigation showed that these attitudes should be considered in relation to the thought-structure of the indigenous population, the base of which was animistic even where Islam prevailed. Animism by its nature was conservative; therefore hygienic measures met with opposition, except when the fear of an immediate danger as from cholera or small-pox kept it down, or where the native's mind was made accessible to new ideas. In this connexion he greatly praised the work of the missionary societies. Prof. Kielstra unfolded how modern colonisation itself paves the way for new ideas, since it cannot abstain from measures which influence native society and force its members to adjust their attitude. Moreover, it was sufficiently proved, he said, that when the influence of the indigenous society was eliminated—as, for instance, in the army or among the Javanese labourers on the estates in Sumatra—hygienic results could be obtained as in any western society. In his opinion the public health service should confine its work to general hygienic measures—such as the draining of swamps, the regulating of rivers, and the improvement of housing conditions—until ethnological and social observations showed that the indigenous population was ripe for more individual medical treatment.

THE HOSPITAL ALMONER

A STUDY of hospital social services in England has been published by the Committee of the Hospital Almoners' Association and is obtainable at the Institute of Hospital Almoners, Tavistock House, W.C.1, for 2*s*. It is dedicated to Sir Charles Loch, to whose intimate study of the working of out-patient departments of the London hospitals the foundation of the office of hospital almoner is due. The pamphlet deals briefly with the development of the British hospital system and the early days of almoners' work. The present duties of the hospital almoner are discussed in more detail—her social work, practical problems connected with institutional and convalescent treatment, procuring instruments and surgical appliances for patients, arranging for special diets and extra nourishment and rest, and for the care of chronic and incurable cases, and of those who are cripples or mentally subnormal. Social work in municipal hospitals, the prevention of hospital abuse, the assessment and collection of patients' donations, coöperation with other workers and other funds, and follow-up work are also discussed. More specialised almoners' work, such as work in venereal disease, maternity, and ophthalmic departments are indicated. An interesting chapter is that describing a typical day in an almoner's life. In a future edition it may be hoped that the conditions of entry to this comparatively new profession and some account of the course of training provided will be included.

THE MECHANISM OF HYPNOTISM

Two little brochures [1] recently published deal with hypnotic suggestion on somewhat the same lines. Dr. Cannon concentrates on the stages of induction and the physiological state that supervenes. He describes very fully the various methods used; but is frankly most interested in the neurology of the condition. Mr. Metcalf is more psychological, and even gives Freud's interpretation of the state of hypnosis—i.e., its relationship to transference and the libidinal rapport between subject and physician. He discusses the relation of hypnosis and suggestion to Christian science and religious healing in general, and writes discursively on spiritism. Clinicians might profitably read this book, since the influence of suggestion and the unconscious application of psychotherapy are far more potent factors in their daily work than most of them realise even to-day.

ZEBE-À-PIQUE

VEGETABLE extracts have some vogue in West Indian islands as malaricides. One of these is zebe-à-pique, which is the local name for the bastard cedar bush (*Parphenium hysterophorum*) commonly distributed over the island of Grenada. A favourite method of preparing the extract from the leaves is to place three or four in a bottle of vermouth, brandy, or whisky until the infusion is very bitter. Incidental to a malaria survey of the island under the auspices of the international health division of the Rockefeller Foundation, an examination of the efficacy of this reported remedy was made by Dr. J. Andrews,[1] assisted by the staff of the colony hospital at St. George's. Varying doses from one tablespoonful to a wineglassful were given with meals three times a day. In all, 12 individuals suffering from the clinical manifestations of malaria, in whose blood subtertian malaria parasites were demonstrable, were placed under observation. Of these, one half (six) received normal quinine therapy whilst the remainder received the nostrum. No proof could be obtained of any specific action. Dr. Andrews concludes that if zebe-à-pique does have any malaricidal properties they are not comparable with those of quinine.

ABSORPTION OF OXYGEN FROM THE SUBCUTANEOUS TISSUES

OXYGEN is sometimes administered subcutaneously for therapeutic purposes, and an attempt has lately been made by Indeyit Singh,[2] of Rangoon, to find how fast it is absorbed from the tissues. Decapitated cats were used in the experiments, and preliminary observations on oxygen intake were made to see whether metabolism was constant or whether it was declining regularly—in which case corrections had to be made. The concentration of oxygen in the inspired air was maintained at a constant level, and after the preliminary estimations oxygen was injected subcutaneously at one, two, three, or four places; it spread, as a rule, over more than half the total subcutaneous area if four punctures were made. The rate of consumption of oxygen was observed at half-hourly intervals, and the investigator found that absorption from the subcutaneous tissues was very slow; it varied from 0·6 to 1·2 c.cm. per minute when 500 c.cm. were injected. An hour, or an hour and a half, after injection absorption almost ceases, owing to the lowering of oxygen tension by the diffusion of carbon dioxide and nitrogen from the tissues.

It is concluded from these experiments that the efficiency of the lungs in saturating the blood with oxygen is 15 to 20 times greater than that of the whole subcutaneous region.

LONDON MEDICAL EXHIBITION.—The Wilson Rubber Company, Ltd. (Slough, Bucks), ask us to point out that no foreign labour is now employed in their factory.

LONDON MEDICAL SOCIETIES

LAST week we gave a list of officers of London medical societies during the present session. The following particulars may be added to those already published:—

Hampstead Medical Society.—President: Dr. Herbert Dixon; Hon. Secretaries: Dr. G. B. McCaul and Dr. David Gillespie. Address: 248, Finchley-road, N.W.3.

London Jewish Hospital Medical Society.—President: Mr. Harold Kisch, F.R.C.S.; Hon. Clinical Secretary: Dr. David Krestin. Hon. General Secretary: Dr. L. Phillips. Address: London Jewish Hospital, Stepney Green, E.1.

North London Medical and Chirurgical Society.—President: Dr. P. O. Ellison; Hon. Secretaries: Dr. W. E. Snell and Dr. Kathleen Matthews. Address: Royal Northern Hospital, Holloway-road, N.7.

Priory Medical Society.—Hon. Secretary: Dr. John Reid. Address: Thornton House, The Avenue, N.W.6.

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[1] Hypnotism, Suggestion, and Faith-healing. By Alexander Cannon, M.D. London: William Heinemann, Ltd. 1932. Pp. 43. 2*s*. 6*d*. Hypnotism and Mental Healing. By Thomas Metcalf. London: Epworth Press, J. Alfred Sharp, 1932. Pp. 96. 2*s*. 6*d*.

[1] Reprint from the Amer. Jour. of Hyg., 1930, xi., 411.

[2] Quart. Jour. Exp. Physiol., 1932, xxii. ,193.

ADDRESSES AND ORIGINAL ARTICLES

SUGGESTION, HYPNOTISM, AND THE WILL *

By WILLIAM BROWN, D.M. OXF., D.Sc., F.R.C.P.LOND.

WILDE READER IN MENTAL PHILOSOPHY IN THE UNIVERSITY OF OXFORD; HON. CONSULTING PSYCHOLOGIST AND DIRECTOR OF THE PSYCHOLOGICAL LABORATORY, BETHLEM ROYAL HOSPITAL

MODERN investigations of the phenomena of suggestion and auto-suggestion are throwing further light upon the nature of the will. In suggestion as ordinarily understood the mind is regarded as in a momentary state under the driving force of ideo-motor action. An idea, an impression, a thought, is in the mind, and that thought tends to pass over into action. Indeed, Pierre Janet's theory is that in suggestion an idea produces its maximum effect, and conditions favourable to suggestion do tend to produce the maximum effect, keeping other considerations—competing considerations—in abeyance. In ordinary normal mental life idea follows idea, and you have a train of mental activity going on, as it were, on the surface of the mind, and any particular idea is not given time to produce its maximum effect, but is quickly replaced by another. But in formal suggestion treatment, what is aimed at is to give this idea its full chance to express itself to the fullest possible extent. So suggestions of muscular power take effect as long as ideas of muscular feebleness, difficulties, and doubts are kept in abeyance. The idea of a sensory experience, such as a feeling of heat or pain, can be intensified and allowed to produce its full effect. An idea of a burn or blister will actually raise a blister in a hypnotised patient where competing ideas are kept away. Ideas are not mere ideas, they are also forces. They carry with them not only a cognitive aspect but also a conative aspect, an aspect of striving, a tendency to bring about some change in the outer world or in the inner world. In suggestion an idea is given an opportunity of developing itself to its full extent. That is one way of thinking of suggestion.

Suggestion and the Subconscious

Prof. W. McDougall defines suggestion as the acceptance of an idea independently of logically adequate grounds for such acceptance. A subject of successful suggestion treatment accepts what is said to him independently of logically adequate grounds. But here the word acceptance can have more than one meaning. The individual may consciously accept and nothing may happen. Conversely an individual may consciously reject or doubt and yet something may happen. The acceptance of the idea depends on the condition of another part of the mind than the conscious mind—viz., on the condition of the subconscious mind, the background of the mind. That again is merely a popular term. The subconscious is the sum total or system of fundamental tendencies, urges, instincts, interests, which the individual has inherited from previous generations, and others which he has developed on the basis of his earlier inherited instincts. All these are of importance to him. In his conscious mind he may not have a clear and adequate view of what are the most important urges of his life. Consciously he may attach himself to certain aspects of existence, certain desires and wishes, whereas the desires and wishes that are fundamentally more important and move him more are hidden (more or less) in the subconscious. Suggestion appeals to these subconscious wishes and desires, and the realisation of suggestion is the realisation or modification of such wishes and desires. Hence the surprising results which may sometimes occur in hypnotic suggestion. Certain suggestions may be hardly accepted at all, hardly reacted to, although the person seems to have obvious reasons for responding. Other suggestions may be accepted, although there is no obvious reason in consciousness why they should be. This is specially the case with regard to pathogenic or bad suggestion. A person does not consciously wish to be ill. He consciously fears illness. Nevertheless he may have a subconscious desire for illness because of a craving for sympathy or for power over relatives, or to preserve his self-respect in the face of apparently insurmountable difficulty. He may cut these fears out of his conscious mind and yet retain them in full force in his subconscious. There are two general forms of fearlessness: the fearlessness of the individual who has faced the ordinary possibilities of danger and has recognised once and for all that fear is no good and gives it up, and that of an individual who finds the experience of fear a painful process, and so turns away from it but does not really face the matter, and then can be easily taken off his guard, and subconscious fear may surge up or may manifest itself in consciousness in distorted ways. Fear is an important factor in the working of suggestion even on the fully conscious level, but it is very much more important when working on the subconscious level.

Suggestion, Instinct, and Emotion

Nevertheless it is not only fear and desire that may explain the realisation of suggestion, but the working of every fundamental instinct. There is not a primary instinct that does not bring its own suggestive tendency. Self-assertion, self-abasement, gregariousness, curiosity, whatever it may be, brings its own suggestion. The secondary emotional tendencies also bring suggestion. Jealousy, which may or may not be a primary emotion, brings its own system of suggestion. A person under the influence of jealousy is ready to believe statements about a rival which he would not believe if he had a completely clear and rational view of the situation. Baudouin has put the matter in the following way. He regards emotion as an auxiliary factor, a factor that helps suggestion. This statement needs qualification and correction. The truth is, firstly, that the instinctive tendency underlying the emotion is in some cases the driving force of suggestion; and secondly, that the emotion is often a sign of conflict, of a lack of unity of the mind. The mind is not at one with itself, and in this condition suggestion is more likely to be accepted. For in these cases emotion is not so much cause as effect. Emotion is a sign that the person is not in harmony with himself, and can be taken off his guard, and thus become the victim of suggestion. He cannot marshal his intellectual powers and ideas, to bring them to bear on the situation. He has been carried away by the suggestion before he has really begun to think about the matter.

Suggestion and Volition: the Law of Reversed Effort

Then the problem of suggestion impinges upon the problem of will, in the facts under the general "law

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* Paper read to Section J (Psychology) of the British Association for the Advancement of Science at York on Sept. 2nd.

of reversed effort." The facts had long been recognised, but Coué was the first to summarise them in a paradoxical and challenging way. "Where the will and the imagination are in conflict," he says, "the imagination always wins." And he identified imagination with suggestion. In his little book, "La Maîtrise de Soi-même," the word imagination in French is interchangeable with suggestion. He puts suggestion or imagination higher than will. One feels there must be some error here, because according to any systematic theory of psychology, will is the highest form of mental activity. Will indeed is the entire mind in action in its unity—so far as at any moment it is a unity—it is the character fully expressing itself. If the character only partially expresses itself, the man's actions may not be entirely in harmony with his character. If the other sides of the character show themselves later the person may feel remorse or regret. He would not feel this if his mind had previously been acting in its entirety.

How are we to explain the law of reversed effort? Let us take examples. (1) A desire to remember a proper name. We are unable to do so; we make an effort, and we find that the more effort we make the less we succeed. Whereas before, the name was "on the tip of the tongue," it now seems entirely to retreat, and leaves no sign in consciousness. On the other hand, if, instead of willing and making an effort, we calmly think to ourselves that the name will come to us presently and that we will not bother about it, we find that it does come. Or (2) when we are learning to ride a bicycle, if we see a stone in the road, and become alarmed and make an anxious effort to avoid it, there is a tendency for the bicycle to make a bee-line for the stone. On the other hand, if we keep calm and cool, and simply affirm to ourselves that we are going to avoid the stone, we do avoid it. In the effort to remember the name or avoid the stone, have we will? We have desire and wish—a wish that is spasmodic, that is violent, but we cannot say that with our whole mind we have willed to avoid the stone or remember the name, because will in its complete form carries with it *belief that we shall succeed.* That is why, as Aristotle said, we cannot will the impossible. We can will what we believe to be possible, although it actually is impossible, and then we fail. Where we know that the result is impossible we cannot will. In the case of the forgotten name there is a fear of failure checking and preventing us from reaching the complete stage of will. If we can reach the complete stage of will, believing that we are going to remember the name, that will produce the maximum effect. But in the condition of effortful wish, the spasmodic effort arouses and intensifies the fear of failure, which prevents the belief in success. Belief in the possibilities of success, the essential constituent of will, is absent. You have wish instead of will. You have suggestion accompanied by fear of failure, based upon the fear instinct or the danger instinct. And against that you can only put the desire to succeed, unaccompanied by any special emotion. This is put against the idea of failure, accompanied by fear of failure, which is what Coué means by the imagination.

There is really a conflict between two imaginations—the imagination of success and the imagination of failure. The imagination of failure is accompanied by a feeling of fear. There is no real conflict between will and suggestion, but a conflict between one suggestion and another suggestion. The state is a state of incomplete will. Coué was quite right in his practical conclusion that in order to get the maximum effect of suggestion treatment, patients should avoid effort, because effort tends to bring with it the idea of failure and fear of failure, and tends to neutralis any effort towards success. Our deepened of suggestion derived from its use in psychotherap has deepened our insight into the nature of the We still hold that any patient suffering from psy neurosis suffers from defective will. He needs to b helped to achieve complete volition. In directions a patient is unable to will; if he tries t will, the law of reversed effort comes in.

A typical example is agoraphobia; a p suffering from fear of open spaces cannot walk dow the street or cross the street, becomes more and m panicky and nervous, and has to return home. An the more he tries the less he succeeds. It is n that his will is failing, but that he has not reall completed the act of will in this respect, that he unable to walk down a street alone and unable reach that state of will which involves calm in success. A feeling of certainty is absent. Why The reason can only be discovered by deeper anal going over the patient's past life and seeing how agoraphobia set in. The memories and tenden of those early experiences are of importance to patient and to the doctor who wishes to cure him. The doctor helps him to will, to be capable of compl volition. In this volition, apart from analysis, it necessary to get rid of spasmodic effort, spasmodic effort brings fear of failure. If encourage the patient to get rid of his fears, to calm, he will be more successful. And the way which you give the patient advice is to encourage to make the affirmation with confidence, with that he is going to succeed. If the patient himself down and says, "I am going to manage it, he is more likely to succeed. He has to attack source of the fear by analysis, but suggestion tre ment will help him to reduce the fear to a when it does tend to rise.

In a way suggestion treatment is a of the will, or a help towards the completion of the will The complete will carries with it the suggestion success, an adequate control of the imagination The individual has to train himself to imagine success. It is important, not only for psychoneurotic patient but for all of us, to train our imagination in this matter. That is why I am so emphatic that fea should be denied, should be turned away from, and in its place should be put confidence, and one sh make affirmation to one's self that whatever happen one is not going to be afraid or disturbed. This i more than the spirit of stoicism. The spirit of stoicism is that evil, though inevitable, should be bravely borne, but in this attitude of mind you go further and "deny" evil. Having taken whatever steps are necessary to avoid danger, you refuse to let the thought of danger play upon you subjectively and lower your vitality by raising a feeling of fear. Likewise with lesser dangers and difficulties, there should be control of the imagination so that the mind is as active as it possibly can be in its unity.

Auto-suggestion for the Normal Person

I should like here to emphasise the value and importance of formal suggestion and auto-suggestion for the *normal* person as a means of increasing his mental power in various directions. If he makes calm affirmations to himself while lying on a couch in a state of mental and muscular relaxation, such affirmations may be realised by subconscious mental activity and in this way he may improve his powers of mental concentration, his memory, and his mental aptitude along special lines. He may also correct bad habits and increase self-confidence and self-control.

Often suggestion treatment from another person is needed to give him a start, and then he can carry on by himself. The method acts by releasing mental tension and removing subconscious dead-locks and inhibitions, encouraging spontaneity and self-realisation. Above all it neutralises subconscious doubts and fears, and clears the way for the creative process that wells up from the depths of the mind. Thus it can revive failing inspiration in the realm of music and of the other arts, and can enable a discouraged person to believe in himself once more. By facilitating the imagination of success, and by giving precision and control in imagination, it contributes powerfully to adequate and complete volition in any special direction. Perseverance in the practice of auto-suggestion may sometimes transform a person's temperament and change him, for instance, from a worrying and self-tormenting hypochondriac into a man of calm tenacity of purpose and serene self-confidence.

Personality and the Will

This brings one to the question of personality. When considering the question of will, the question of personality is not far behind. It is the same problem looked at from a different point of view. When we speak of the will we think of the momentary reaction of the mind to a particular situation; when we think of the character, we think of the totality of the mind expressing itself in the will. We are at once faced with the problem of multiple personality, and our best way of dealing with that problem is to avoid rushing to extreme cases of multiple personality and drawing premature conclusions from them, but to consider closely the variations of the so-called normal mind.

In the normal mind there is a tendency to alternation of mood and to multiplicity of ideals. Individuals have more than one ideal of themselves. Especially as children do they find from day to day and from week to week that they have different ideas as to what they would like to be, which are mutually exclusive. So the mind oscillates from day to day, and gradually settles down as one gets older under the pressure of circumstances, and a sort of natural selection goes on. Certain ideals are stamped out under the cruel influence of circumstances. The individual throws himself more and more into the following up of one ideal. But nevertheless he has to meet different types of people with different interests and ideals, and we find that he responds to them in different ways. He is certainly a different kind of person in one general environment from what he is in another. His business self is different from his social self, and both differ from his religious self. With every single person he meets he is slightly different. He does not show the same side of himself to different people. These different aspects are, in a way, subsidiary selves and one can be encouraged at the expense of others.

Besides that there is a more fundamental unification, the more fundamental self, of which these are manifestations. The question is whether that more fundamental self is something existing at the beginning and continuously present and active through life, or something that is gradually being developed. From the purely scientific point of view there is much to be said for the theory of development, that the personality is created partly through identification with different types of people who call out admiration, and partly under the impetus of innate tendencies. Besides that there is the work of reason, which is of great importance. The individual learns from experience, and knows that if he follows up certain spontaneous fundamental tendencies he suffers for it; he is unhappy and makes other people unhappy. Besides this he gets a feeling of lowered worth..

Here we must admit an intuitional element. We must assume that the individual comes into the world with the power of discovering values through intuition or direct insight. Just as he can discriminate values in beauty, truth, and goodness, so he can discriminate values as regards personal activities. This power is to a certain degree a power of creation. The mind pushes forward, develops out of the primitive levels, the earlier stages of evolution, and is continually pushing forward, and it is reminded of this especially when it fails, when there is regression. And of course in wrong-doing there always is such regression. But especially in pathological cases, in nervous illness, is there a regression, and the symptoms are signs of such regression. The mind is failing in some directions to proceed, and is retreating from reality. And in order to save itself from the realisation of this retreat it becomes definitely ill.

Illness is a piece of apparent bad fortune that prevents the mind from understanding the true situation and relieves it of the responsibility of failure. In treatment therefore we have to encourage the patient to face the situation more fully, and to be ready to accept responsibility once more. But I admit that this is a hard saying and in some cases really too hard. Often the illness is the result of failure to deal with responsibility almost too heavy for the individual's shoulders, and the main burden of responsibility should be placed not on the individual but on society. There is such a thing as collective responsibility, and in many cases the responsibility for the failure of some particular individual may be more the responsibility of the people around him. Where a person has become psychoneurotic through unfortunate experiences in early life, the responsibility rests on the shoulders of those who should have protected the child from such experiences, rather than on the child itself.

We find that just as auto-suggestion strengthens the will, because it gives the patient the opportunity of controlling his imagination, so analysis is an indirect means of training the will. Through analysis the individual is relieved from false personality, from undesirable influences of early life, undesirable identifications, &c., that have taken place. As the patient reviews his past life, as these influences come up, he sees them for what they are and can simultaneously free himself from them. He realises how much was just childish imitation. He can bring reason to bear and later experiences to bear, and see things in their true proportion, and so judge their value more truly.

Multiple Personality

Finally we have to decide about the more extreme cases of multiple personality. We must bear in mind the possibility that they are artificially produced or intensified through the hypnotic methods employed in investigating them. They are small in number, few and far between. One does not question the bona fides or genuineness of the scientists, many of them of high standing, who have reported such cases, but it is possible that in trying to describe the cases they may have made the facts too clear-cut. An investigator of such experience in these matters as Dr. Morton Prince has emphasised his belief that multiple personality is not a denial of the unity of the mind. These persons are one, and only many in the sense that they are one. These other personalities of theirs are aspects of the one personality. The main reason for the limited aspect of the subsidiary personality is a breaking across of the memory continuum. But that is not the only characteristic. You seem to have a dissociation not only of past memories, but also of instinctive dispositions, and this shows itself in a selective influence over the memories. Certain sets of memories are controlled by the self-assertive instinct, others by the instinct of self-abasement, and so may arise an alternation of a depressed with an elated personality.

The cause of dissociation may be physiological and ultimately physical. It may be that through fatigue toxins are produced which paralyse some of the synapses of the higher levels of the nervous system, so that you get a dissociation on the cerebral side, and the brain cannot function as a unity. So with rest and physical treatment these patients may gradually recover. On the mental side, too, there is incompatibility of thought, mental conflict, a deadlock, and one side or the other has to give way.

The Psychology of Conversion

It is in such a mental situation as this that the phenomenon of conversion may occur. In conversion you have a change of heart and mind, almost a new birth, the appearance apparently of a new person. Probably in its true form it is a process of growth. There has been a certain incubation period during which ideas have been maturing—a new outlook has been maturing—but it does not come into consciousness until a later stage of development is reached, and the person looks back on his past self as dead. He rises on stepping-stones of his dead selves. Indeed it is possible that this is really the most accurate way in which we can describe the development of the mind. We hold certain general ideas which must later on be superseded, we pass from ideal to ideal, and as we near the achievement of some ideal we realise its weakness and shortcomings, and a new ideal, a further prospect has been opened to us. "New occasions teach new duties." That may come sometimes very suddenly in the form of a conversion experience. In religious psychology conversion is best defined as a turning away from a merely naturalistic outlook on life to a more spiritual outlook, a turning from the temporal to the eternal, a realisation that there is an eternal aspect of life where one may be spiritually secure independently of whatever misfortune may befall one. The personality suddenly recrystallises into a new mental attitude with an altered scale of values, and with renewed energy and inspiration, and a deepened insight into the meaning of existence.

SURGERY OF THE BLOOD-VESSELS*

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Those who have paid homage to Murphy at these great assemblies in past years have alluded specifically to some branch of his work, and some have recorded their own experiences in surgery in order to emphasise their indebtness to his teaching. The scope of Murphy's writings is so wide that each successive speaker has been able to find a path which covers new ground. By referring to individual and detached cases I will endeavour in small measure to follow this precedent, and I propose to begin by speaking of the surgery of the blood-vessels.

This branch of surgery became a favourite subject of research and of practice during the opening years of the last century.[1] The teaching of John Hunter was carried across the Atlantic by Wright Post to New York, by Physick to Philadelphia, by Gibson to Baltimore, and by Warren to Boston. One surgeon alone, Valentine Mott, ligatured the common carotid 43 times, the external carotid once, the first part of the subclavian once, and the third part of the subclavian four times. It is no matter of surprise, says D'Arcy Power, that the tradition of the surgery of the blood-vessels is stronger in the United States than it is in this country. Prof. Rudolph Matas has notably maintained the tradition at New Orleans by his reparative treatment of aneurysm which is based upon experimental surgery in the true Hunterian spirit.

Murphy was at home in the realm of vascular surgery. In the year 1896 he performed the first recorded end-to-end suture of a divided artery. His description of how he approached a false aneurysm of the axillary artery by division of the clavicle and ligature of the subclavian artery is a noteworthy contribution to his surgical records. He paints a dramatic picture of a case of aneurysm of the internal carotid artery mistaken for a tonsillar abscess. Then comes the mention of 13 different forms of treatment for aneurysm, and finally the statement that no surgeon should start the active practice of surgery until he has done a considerable amount of experimental work on the arteries and veins of dogs.

LIGATURE OF THE INNOMINATE ARTERY FOR RIGHT SUBCLAVIAN ANEURYSM

In May last I ligatured the innominate artery for aneurysm of the subclavian artery involving the first and second stage.

The patient was wounded in 1915; pieces of shrapnel were shown by X rays, scattered in the region of the right shoulder-joint, and portion of a bullet could be felt to the right of the suprasternal notch under the insertion of the sternomastoid muscle. The wall of the artery was apparently injured, but the aneurysm did not become evident until 1928, 13 years after the wound. It steadlily increased in size until the swelling above the clavicle reached the size of a duck's egg. The right recurrent laryngeal nerve was paralysed. The radial pulse was not affected, the blood pressure was the same on both sides. The X rays demonstrated some calcification within the sac. The Wassermann reaction was negative.

In some respects this tumour was not typical of aneurysm; there was no bruit, expansile pulsation could not be detected; there was no difference in the carotid or radial pulses when compared with those of the other side. The operation was designed to ligature the subclavian artery behind the scalenus anticus muscle at the commencement of the second stage.

The middle portion of the clavicle was turned downwards on the chest with its pectoral attachments. The aneurysm was laid bare and the bullet was removed. The external and internal jugular veins were found obstructed and distended. The supraclavicular and transversalis colli arteries spread transversely across the upper portion of the tumour. The scalenus anticus muscle had disappeared and the phrenic nerve was not located. It was soon seen that the sac extended to the bifurcation of the innominate artery, and that ligature of the subclavian vessel was impossible. It was obvious that without further removal of bone the innominate artery could not be exposed behind the sterno-clavicular articulation without the rough handling of the aneurysm, which had led to disaster in many recorded cases. With chisel and mallet, the inner end of the clavicle together with the right half of the manubrium sterni (leaving the sternoclavicular joint intact) were separated and retracted ards and to the left. The innominate artery was now alised in its entire length. The innominate veins were seen; the pleura caused no embarrassment, the nerves ained hidden.

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* Abridged from part of the J. B. Murphy oration delivered before the annual clinical congress of the *American College of Surgeons* at St. Louis on Oct 17th.

wo ligatures of No. 2 chromicised catgut were passed d the artery distal to the thyroidea ima branch. They e gradually tightened, taking care not to cut through inner coats of the vessel. Pulsation at once ceased in aneurysm and the radial pulse disappeared. Proximal he ligature each pulsation appeared like a sledge-hammer v upon the occluded portion. It looked as if the assault ld not be resisted. For this reason an additional single ture of catgut was placed round the artery near its origin n the aorta. The thyroidea ima was ligatured with fine . The divided portions of the sternum and clavicle e replaced in position and held by catgut passed through l holes. Recovery was uneventful but for some downward placement of the divided portion of the clavicle. In three s the radial pulse reappeared and within a week it was l and synchronous with the pulse on the opposite side. ur months after the operation the aneurysm had npletely disappeared.

The lesson learnt from this case was that ligature the innominate artery was not a difficult operation ovided the old inadequate methods of approach ere abandoned. Six weeks after ligature some slight lsation could be felt in the aneurysm, but otherwise e cure appeared complete.

Up to and including the year 1922, according to allance,[2] there had been 57 ligatures of the innominate rtery, with 19 recoveries.

A case of ligature of the innominate artery was exhibited y Mr. Coppinger, of the Mater Hospital, Dublin, at the ection of Surgery of the Royal Academy of Medicine in reland on Feb. 24th, 1893. The record states that this as the first successful case of ligature of the innominate rtery ever exhibited at any medical society in Europe.

The ideal operation for subclavian aneurysm is xcision of the sac after proximal and distal ligature. This has been successfully performed by Moynihan,[3] by Halstead,[4] who removed with the aneurysm a portion of the subclavio-axillary vein, and also by Braithwaite.[5] The possibility of ligaturing either the first or second portion of the artery is a condition precedent to excision. Both portions were involved in the sac in the case just mentioned.

In a volume on the works of Colles by Robert McDonnell,[6] who was President of the Royal College of Surgeons in Ireland in 1877, the operation of tying the subclavian artery is admirably described. Colles attempted more than once to ligature the first stage of the artery, a far more difficult procedure than ligation of the innominate. He thought that ligature of the first stage on the left side was almost an impossibility, but A. K. Henry [7] has shown that this operation is greatly simplified by an approach from behind.

THORACIC ANEURYSM TREATED BY WIRING

Some years ago (1928) an ex-soldier was admitted to hospital with an aneurysm protruding through the chest wall to the right of the sternum below the clavicle. It appeared on the point of rupture.

The heart and aortic arch were shown in the radiograms to be greatly enlarged. It was thought that rupture might be delayed by consolidation if a wisp of Colt's wire was introduced. A month later the end of the wisp at the point where the wires are joined became superficial and later ulcerated through the skin. The junction was nipped with pliers and all the strands of wire were removed from the aneurysm. Three months after operation the patient died from gradual leakage into the mediastinum and pleural cavity? No post-mortem examination was obtained.

ABDOMINAL AORTIC ANEURYSM

America holds the world's record for thoracic aneurysm treated by wiring and electrolysis. Colt [8] states that Dublin holds the record for abdominal aneurysm treated by wiring alone.

In August, 1910, a patient with a large abdomina aneurysm in the region of the cœliac axis was treated in Mercer's Hospital by the introduction of a cage of Colt's wires (150 in.) into the sac. He died suddenly on March 31st, 1928, approximately 18 years after operation. The doctor in attendance reported there was no abnormality of pulse or temperature, or signs of internal hæmorrhage when he saw him immediately before death, but no post-mortem was obtained.

In a second similar case [9] a wisp of 105 in. of wire was introduced into the sac of the aneurysm. After operation the man was passed as sound for service during the war as a stoker on a patrol trawler in the Naval Reserve. He died of leakage from a secondary dilatation of the aorta below the aneurysm while thus serving, four years and eight months after operation. At post-mortem examination the aneurysm was found completely consolidated. It was about the size of a full-time fœtal head. The wires had expanded uniformly. The specimen is preserved in the surgical museum of Trinity College.

The abdominal aorta was first ligated by Sir Astley Cooper. In 12 cases recorded subsequently the mortality was 100 per cent. Nevertheless, ligature below the renal vessels has been followed by success. Brooks [10] describes and illustrated a case which died of intestinal obstruction three months after successful ligation.

The prognosis of abdominal aneurysm without operation is unfavourable. The duration of the condition is said to vary from three months to three years.

ANEURYSM OF THE POPLITEAL ARTERY

How the more modern conception of the surgery of the blood-vessels comes to our assistance may be illustrated by a case of popliteal aneurysm in a man aged 62.

The aneurysm resulted from a slight injury and had reached the size of a coconut. It had extended upwards from the popliteal space to the opening in the adductor magnus. The patient was a bad surgical risk. He was fat and short necked. His heart was fibrillating, his systolic blood pressure was 220, his pulse-rate 140. His foot was cold and gangrene was impending. The old operation of ligature of the femoral artery would almost certainly have been followed by gangrene. An extensive operation on the sac or amputation, in all probability, would have been followed by death.

A complete cure with restoration of the circulation in the limb followed resection of 1 in. of the artery in Hunter's canal and ligation of the femoral vein.[11] Resection of the artery is a radical form of sympathectomy and in this case produced increased heat and blushing of the foot. The sheath of the artery above and below the ligatures was injected with alcohol, as recommended by Sampson Handley, to ensure against transitory vasoconstriction.

The advisability of ligaturing both artery and vein or the vein alone, when there is a dangerous diminution of the blood-supply to a limb has only been recognised since the war. This recognition, reinforced by a better understanding of the surgery of the sympathetic nerves, has saved many limbs from death in recent years.

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ORTHOPÆDIC TREATMENT IN POLIOMYELITIS

IN THE ACUTE AND SUBACUTE STAGES

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In view of the prevalence of infantile paralysis at the present time, it will probably be useful to call attention to the importance of correct treatment in the early stages of the disease. Diagnosis is always difficult until the actual loss of power in certain muscle-groups has become evident. In other words, the disease is fairly well established, as a rule, before the diagnosis is made and treatment is instituted. It is all the more important, therefore, to retrieve as much as possible of the lost ground. Moreover, the right choice of treatment at this stage has a very direct bearing upon the ultimate functional capacity of the patient. It may, and often does, determine the complete recovery or the permanent loss of certain movements. This statement does not imply, of course, that treatment is the only factor that determines recovery of function or failure; that, notoriously, is not the case; for patients vary very much in their power of withstanding the disease and of recovering from its effects. One quite commonly finds that, in one and the same epidemic, two patients who appear to have been affected about equally in similar muscle-groups, and have received identical treatment, differ markedly in their degrees of recovery. The reasons for this are only very imperfectly known; probably several factors are involved, and at present they are beyond our control. But the important point to appreciate is that unless certain conditions, which are known, are satisfied, recovery of the paralysed muscles will be rendered impossible and a recoverable, preventable paralysis will be converted into a permanent one.

Furthermore, the rapidity with which appropriate treatment is begun seems to have a profound effect, not only upon the degree of paralysis that persists, but also upon the duration of restorative treatment necessary. Treatment at present cannot wholly determine the ultimate result of a case; in some cases (but not in all) certain muscles are foredoomed, and we cannot yet save them. But in many cases the muscles are not thus doomed; they possess the capacity to recover, and when they do so they can be destroyed by wrong treatment, they can be caused to recover by right treatment, and the extent to which they will recover, and the time taken in the process, will be largely determined by the speed with which that treatment is instituted. A week gained at the outset will probably save weeks, and possibly months, later on. The resulting material gain is, of course, enormous; many months of attendance at hospital for massage or for the performance of operations, the provision of splints and walking apparatus, and so on, mean a tremendous strain upon the resources of any family. A right choice of early treatment may well determine whether a patient is to be a lifelong cripple or a self-supporting citizen.

PRINCIPLES OF TREATMENT

Standard text-books say little or nothing about the treatment of poliomyelitis in the acute stage. For the most part they content themselves with remarking that the treatment of infantile paralysis consists in massage, electrical stimulation, and the use of appropriate walking appliances, when necessary, and they give no indication as to the stage at which these treatments should be used, or their relative values. The result is that the average doctor is led to believe that electrical treatment and massage are the mainstay of treatment, even when the disease is recent in onset, and the public, who love anything mysterious and incomprehensible, pin their faith to electricity in any shape or form and clamour for it.

It is therefore vital to state, as emphatically as possible, that in the acute stage of infantile paralysis complete rest and relaxation of the affected muscles constitute the one and only indication in treatment as far as the orthopædic aspect of the case is concerned. It is not enough merely to keep the affected muscles at rest, though that is important; they must be physically relaxed as well.

A paralysed muscle that is stretched will not recover. That is certain. There is abundant clinical proof of this fact. If a paralysed muscle be stretched it will not recover, even though it be given electricity and massage. On the other hand, paralysed muscles frequently recover when given relaxation and nothing else. How long the capacity to recover with relaxation persists is not known. It is probable that when once a muscle has been severely damaged by poliomyelitis and by stretching, a physical change takes place in its structure which renders it incapable of full recovery. But if a paralysed muscle be protected from stretching from the outset it may recover to a considerable extent, even after a number of years, and in spite of a severe initial paralysis. The late Mr. T. H. Openshaw once showed at the Royal Society of Medicine a young man whose quadriceps had so far recovered, after the use of a caliper for 19 years, that he was able to discard the splint and enjoy the use of a stable knee-joint; and this was a patient whose initial paralysis was exceedingly severe.

Rest with relaxation is the sheet-anchor of the treatment of infantile paralysis in the acute and the subacute stages. This is fortunate, because it is, as a rule, a treatment that can be carried out easily and cheaply almost anywhere. It sometimes happens that infantile paralysis attacks a patient who is unable, by reason of distance or expense, to attend hospital, and that the only treatment possible is to provide correct splintage and rest at home. A striking degree of recovery often ensues.

Massage and electrical stimulation are undoubtedly valuable in the later, more chronic, stages of the complaint, though even there they are of less relative importance that the continuous protection of the damaged muscles by relaxation in appropriate appliances. If one had to choose, at any stage of infantile paralysis, between efficient splintage and any other method of treatment, the preference should undoubtedly be given to splintage.

It is often stated that infantile paralysis, being an affection of the motor nerve-cells, is painless; but this is not always or even generally true in the earliest stage of the disease, when some pain in the limbs or along the spine is often present. Exceptionally, the pain is severe. In all cases splintage is the most efficient means of relieving this pain. If fixation be good, relief is almost immediate and lasting.

DISTRIBUTION OF PARALYSIS

It is not always easy to know which muscles to relax. When definite loss of power has appeared the proper line of treatment is obvious. But one would wish, if possible, to anticipate this stage in a case in which the diagnosis of acute poliomyelitis seemed probable on other grounds. It is sometimes possible in such a case to feel the flabbiness of the muscles before definite inability to make voluntary movements has appeared; and it is useful to remember that poliomyelitis seldom affects individual muscles, but nearly always certain groups of muscles. If a group-distribution of suggestive flabbiness be observed in a case of probable infantile paralysis, the diagnosis is rendered so probable that treatment by relaxation of that group should be instituted at once.

One knows from experience that infantile paralysis is specially liable to attack certain muscle-groups. For instance, the quadriceps extensor cruris is more likely to be affected than the hamstrings, and the extensor group on the front of the shin is very likely indeed to be affected; more or less foot-drop is still one of the commonest stigmata of a bygone attack of infantile paralysis. As a general rule the paralysis is much more extensive in the early stages of an attack than it is eventually. If, then, one is called upon to treat a patient in the early stage, when no definitive signs have appeared, and several limbs perhaps are paralysed, the best course is to relax those muscles which (1) matter most, from the point of view of ultimate function, and (2) are known from practical experience to be most liable to attack.

THE LOWER LIMBS

In the case of the lower limbs, the quadriceps and the extensor group on the front of the leg are the most important muscles, and are also the groups most liable to be affected. The indication is obvious; the foot must be supported at a right angle with the leg and the knee must be kept straight. (The nurses' beloved pillow behind the knees must here be strenuously avoided.) In the exceptional case, in which the calf was affected more than the extensor group, the reverse treatment would of course be necessary; that is to say, the foot would have to be placed in plantar flexion.

The principle should be carried through, however, to its logical conclusion. One of the commonest defects after extensor paralysis is a flail condition of the toes, which drop down uncontrollably and prevent the putting on of an ordinary boot or shoe. The usual type of splint has a right-angled footpiece, which either stops short of the toes and does not support them at all, or else supports them in the horizontal position midway between extension and flexion. Clearly they should be dorsiflexed by an appropriate cocked-up terminal portion or a suitable pad.

Weakness of the abductors of the hips, and especially of the gluteus medius, profoundly impairs the stability of the pelvis and of the body generally on the lower limbs. Therefore, if the abductors seem to be at all weak, or if both adductor and abductor groups be paralysed, and one does not know as yet which group will ultimately prove to be the more severely affected, the lower limbs should be widely separated to relax the glutei. (The function of the glutei in steadying the trunk upon the lower limbs is even more important than that of moving the thigh in various directions.) Incidentally one may observe that a paralysed gluteus medius is very difficult to substitute, either by the action of other muscles or by surgical operation; one should therefore take all the greater care to protect it when it is damaged.

THE TRUNK

The paralyses of the trunk present a far more difficult problem than any of the limb paralyses. They are not easy to diagnose, though with care one can usually make out which are the preponderating masses that are affected: the effect of gravity comes in to a very important extent; they take, apparently, a particularly long time in recovering; and, most important of all, the functions of all the muscles are important, so that in relaxing any one group the conflicting interest, so to speak, of the opposing group has to be very seriously considered. It is impossible to lay down any fixed rules with regard to the position to be enjoined in any case of paralysis of the trunk muscles; each case must be considered according to general principles. It may be laid down, however, as fundamental that any paralysis, or suspected paralysis, of the trunk muscles necessitates complete and prolonged recumbency. It is probable that many of the cases of severe scoliosis that one still sees in hospital out-patient departments are due to paralysis of the trunk muscles having passed unnoticed and untreated, in face of the much more obvious limb affections. Even so, it is also probable that many trunk paralyses that have in fact been observed have been given insufficient treatment. Three months' complete rest and relaxation are the very minimum, and in most cases a year of recumbency or even longer is the proper period. Such treatment of course involves severe interference with a child's education, and in practice it almost always means residence in a special orthopædic hospital-school; for when the subacute stage has passed, prolonged treatment by massage and the like is indicated, and this can only be obtained in institutions by all but the richest parents. Nevertheless, the time and money are well spent, for thorough treatment of this kind often results in complete or very considerable recoveries even from severe paralyses. On the other hand, lack of treatment, or insufficient treatment, gives rise to some of the most unsightly and disabling deformities. Many of the extreme scolioses that are seen, formerly labelled rachitic, are undoubtedly due to neglected infantile paralysis.

The erector spinæ, the oblique abdominal muscles and the transversalis, and the quadratus lumborum, as well as the ilio-psoas, are all commonly and severely affected by infantile paralysis. The rectus abdominis suffers also, but perhaps less often, and so do the lesser muscles of the trunk. If the back muscle is affected as well as the abdominal, one is in a quandary; if the patient is sat up at all to relax the abdominals the back is being stretched and vice versa. Any raising of the patient is objectionable from the point of view of the action of gravity thus introduced; also the erector spinæ is perhaps irreplaceable, as compared with the abdominal muscles, which can be substituted to some extent by a belt or other device. Therefore, in such a case, it seems best, upon the whole, to keep the patient lying flat. Probably the best relaxation of both erector and abdominal muscles is secured by the prone position. Patients adapt themselves readily to this position, and sometimes indeed prefer it after a few days; at any rate, it seems to be theoretically correct; it gives good results, and it is worthy of being borne in mind as a variant upon the tedious supine position. In the acute stage it is certainly right, except when there is paralysis of the ilio-psoas or of the posterior muscles of the neck—i.e., the upper extremity of the erector spinæ. If the ilio-psoas is specially affected the patient should be raised at the hips, the back being supported flat—that is to say, the hips should be flexed, whilst the trunk lies flat but relaxed on a firm board or other support, hinged to the bed-frame at the level of the hips. The device is identical, in fact, with that devised by Mr. F. G. Ernst for use in Pott's disease would be, in certain respects, an improvement on toxoid-antitoxin.

The qualities which such an antigen should possess may be summarised as follows: (1) rapid induction of immunity; (2) induction of an immunity higher in degree than that conferred by toxoid-antitoxin; (3) induction of immunity, even in "immunologically *obstinate*" *individuals*; (4) *freedom from unpleasant* reactions.

Glenny[2] refers to experimental work on the antigenic effects of an alum-toxoid produced by the addition of aluminium sulphate or potash alum to a diphtheria toxoid.. Of 41 animals treated with alum-toxoid 29 were Schick-negative within three weeks, and all were immune by the fifth week. In the control series none was negative by the third week, and 8 were still Schick-positive as late as seven weeks after injection. Somewhat similar results on a smaller scale were obtained by Ramon by the addition of tapioca to toxoid. Glenny concludes that the increased antigenic response in both cases is due to delayed absorption.

We therefore tried alum-toxoid for immunisation on 436 children (varying from 8 months to 14 years of age). Treatment was commenced in November, 1930, and contact was maintained throughout with Dr. R. A. O'Brien, Director of the Wellcome Research Laboratory, through whose courtesy the necessary supply of materials was obtained.

Experience had already shown[1] that approximately 80 per cent. of unimmunised children were positive reactors. This fact, coupled with the difficulty of inducing parents to submit their children to a protracted series of injections, led us to dispense with the preliminary test, both at the clinics and in the day-schools. There remained, however, a third group of children in two institutions over which it was possible to exercise more complete control, and here a preliminary test was carried out.

The basis of comparison has therefore been worked out under three headings: (1) the percentage of *negative* reactors after immunisation in children treated with alum-toxoid and in those treated with toxoid-antitoxin, and the rate of development of immunity in both groups; (2) the number of *reported* cases of diphtheria occurring in both groups after treatment; (3) the rate of development of immunity in a group of controlled *Schick-positive* children in institutions.

In introducing the alum-toxoid, which is designated A.M.T., the laboratory workers were faced with an almost complete lack of experience of its use with human beings, and had to proceed with extreme caution in regard to the degree of dilution of the toxoid and the proportion of added alum. Four different batches were tried out during the experiment, and in assessing the value of the work done it is important to bear in mind the Lf value[3] of the different batches, which varies in proportion to the dilution of the toxoid and the amount of added alum. The following Table shows the relative composition of the different batches.

TABLE I

Showing the relative composition of different batches of alum-toxoid.

Batch.	Dilution of toxoid.	Percentage of alum.	Lf value.
B6219	1 in 10	0·5	under 1
B6217	1 in 10	2·0	1·5
B6539	1 in 1	7·5	11·0
B6707	1 in 1	9·0	15·0

B6219 was the first batch used; only nine cases were treated with this antigen, which was withdrawn shortly after introduction.

The original procedure was to give a preliminary dose of 0·25 c.cm., and if no unpleasant reaction resulted to proceed to 0·5 c.cm., with two subsequent doses (at fortnightly intervals) of 1 c.cm. each. The procedure with the other batches was somewhat different. With B6217 our experience in the early cases enabled us to proceed straight away with a full primary dose of 1 c.cm. for the later ones without provoking any unpleasant reactions. With B6539 the procedure throughout was to give a preliminary dose of 0·5 c.cm. and two subsequent doses of 1 c.cm. each. The reactions (if any) with both B6217 and B6539 were almost invariably mild, but in one or two instances it was necessary to modify the technique. A similar procedure was used with B6707. No reaction of any consequence ever developed after *the preliminary dose of 0·5 c.cm.*, although there was a greater tendency for reactions to develop after the subsequent injection than there was with the other batches.

RELATIVE POTENCY OF THE TWO ANTIGENS

The findings of Glenny and his co-workers suggested a period of six weeks between tests with alum-toxoid, and this was determined on. In actual practice this period was exceeded in many instances owing to the difficulty of getting the children to attend for the Schick test. Nevertheless a considerable proportion were actually tested within the prescribed period. With toxoid-antitoxin a further difficulty was encountered. Our early experience with this antigen had shown that it was useless to test children within a period of even three months after completion of treatment, as so many of them still yielded positive reactions. The period was therefore extended to six months. It must be borne in mind, therefore, that whereas in the toxoid-antitoxin group the tests were carried out six, nine, and twelve months after treatment, with the alum-toxoid the tests were performed in so many weeks. Nevertheless, the results have been sufficiently striking to justify the expectations on which they were based, and to serve as an index of the relative merits of the two materials as immunising agents.

TABLE II

Toxoid-antitoxin. Analysis of results of Schick tests carried out after treatment.

Interval*	Results of Schick test.		Percentage. Neg.	Interval*	Results of Schick test.		Percentage. Neg.
	Neg.	Pos.			Neg.	Pos.	
months.				months.			
4	25	8	75·7	10	79	9	89·5
5	203	59	77·0	11	92	13	87·6
6	223	66	77·1	12	55	10	84·6
7	93	23	80·1				
8	163	25	86·1	Totals ..	999	231	81·2
9	66	18	78·5				

* Interval in months between last injection and date of Schick test.

Table II. represents 1230 children. In the subgroup tested within four months of treatment only just over 75 per cent. were negative. The figures for the five-month and six-month periods are slightly better, but it is not until the seven-month and longer periods are reached that the desired results are obtained—80 to 85 per cent. of negatives. In the group as a whole 81·2 per cent. were negative. There is a curious variation in the ratios in the various groups, which can only be attributed to idiosyncrasy. For instance, the maximum proportion of negative reactors (89·5 per cent.) occurs in the ten-month group, while the eleven- and twelve-month groups show a progressively smaller proportion of negatives.

Table III. comprises 270 individuals. In addition, there were 166 cases who failed to present themselves for the Schick test, and have therefore not been included for comparative purposes. It is to be read in conjunction with Table I. There is a very marked improvement in the figures as measured by the proportion of resultant negative reactions. This depends upon whether the figures bulk largely in the interval period, 0 to 6 weeks, or in that of 7 to 12 weeks. This is what one would naturally expect, and it is necessary therefore to analyse the figures further.

TABLE III

Alum-toxoid. Analysis of results of Schick tests carried out after treatment.

Interval*	Results of Schick test, with batch numbers of materials.							
	B6219		B6217		B6539		B6707	
	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.
4 weeks	—	—	6	—	—	—	—	—
5 ,,	—	—	17	2	—	—	—	—
6 ,,	—	—	21	3	65	7	—	—
7 ,,	—	—	27	—	3	—	7	—
8 ,,	—	—	20	—	2	—	5	—
9 ,,	—	—	—	—	4	—	9	—
10 ,,	—	—	3	—	6	—	18	—
11 ,,	4	1	3	—	9	—	13	—
12 ,,	2	2	9	—	—	—	2	—
Totals ..	6	3	106	5	89	7	54	—

* Interval in weeks between last injection and date of Schick test.

With B6219 all the cases come within the latter group, so that no further examination is necessary. With B6217 49 cases were tested within six weeks and 62 between seven and twelve weeks. In the former group 86·2 per cent. were negative and in the latter 100 per cent., while the group taken as a whole over the full period of twelve weeks yielded 95·5 per cent. of negative reactors. With B6539 72 children were tested on the expiration of six weeks as compared with 24 during the seven- to twelve-week period, and, as one would therefore expect, the group taken as a whole yields a slightly smaller proportion of negative reactors than the B6217 group. It is found, however, that of the 72 cases tested after six weeks no less than 90·2 per cent. yielded negative reactions, which is a very good showing indeed. As with B6217, of these tested between six and twelve weeks (24 in number) 100 per cent. yielded negative reactions. With B6707, all the cases were tested more than six weeks after treatment and all gave negative reactions.

These results may be summarised as follows:—

TABLE IV

Results of Schick tests carried out after treatment with different batches of alum-toxoid.

Percentage negative—	B6219	B6217	B6539	B6707
Over whole period ..	66·6	95·5	92·7	100
In 6 weeks (and under)	—	86·2	90·2	—
From 7 to 12 weeks ..	66·6	100	100	100

In view of these figures it seems reasonable to assume that alum-toxoid will induce a rapid and high degree of immunity.

INCIDENCE OF "IMMUNISED" CASES AMONGST THE DIPHTHERIA NOTIFICATIONS

Three alum-toxoid cases were notified. Two of them (brother and sister) were treated with B6219, receiving 0·5 c.cm., 1 c.cm., and 1 c.cm., on each of their three visits.

In one case diphtheria ensued within three weeks of the last injection, in the other six months later. Neither child had been Schick-tested after treatment. The Lf value of this batch is very low (less than unity). In the third case the batch used was B6217 and only one injection of 0·5 c.cm. had been administered. The child did not attend for the subsequent treatment and contracted diphtheria six weeks later. One may reasonably state, for practical purposes, that there has been no case of diphtheria reported among children treated with alum-toxoid, regardless of whether such children have been subsequently Schick-tested or not.

The confirmed attack rate among the toxoid-antitoxin cases in 1930 was 2·35 per 1000 (as compared with an attack rate of 25·69 per 1000 among non-immunised children under 15 years in Cork City during the year 1930), but if one includes all cases notified the rate is raised to 10·73 per 1000.

The occurrence of such cases has a deterrent effect. Of the 50 reported cases, the diagnosis of 19 was not confirmed after admission to hospital. Follicular tonsillitis furnished the bulk of them, but there were also cases of simple tonsillitis, membranous rhinitis, scarlatina, and "septic sore-throat." It is difficult to suggest how such cases can be avoided with any immunising agent, but nevertheless it is a curious and significant fact that there has not been so far a single such occurrence among the 436 children treated with alum-toxoid.

THE SCHICK TEST IN CONTROLLED CHILDREN IN INSTITUTIONS

There are but two suitable institutions in Cork, both of them orphanages, and they were placed at our disposal by the authorities. The procedure was to perform a preliminary Schick test; the positive reactors were then segregated into two groups, one of which received alum-toxoid and the other toxoid-antitoxin. Six to seven weeks later both groups were again tested and the results noted. Curiously enough our results with the preliminary Schick test in both these institutions were completely different from those obtained among children generally in the city. The two institutions together furnished 405 children, of whom only 38·5 per cent. were positive, as compared with 80 per cent. among the general school population. Dr. H. J. Parish informs me that similar results have been obtained in poor-law schools in England. He estimates that in the average industrial school the immunity rate is in the neighbourhood of 60 per cent.

In order to ensure that exposure to infection should be as even as possible, each group was divided into classes; these classes were further subdivided as evenly as possible, one portion receiving alum-toxoid and the other toxoid-antitoxin. The first doses of prophylactic were administered early in April, 1931, and subsequently at fortnightly intervals. The alum-toxoid used was B6539. In the first instance 0·5 c.cm. was given and two further doses of 1 c.cm. each. Of toxoid-antitoxin 1 c.cm. was administered on each occasion. Approximately six weeks after the last injection the children received the secondary Schick test. The elimination of the original negative reactors, together with leakage caused by leaving school, reduced the number of cases submitted to the final test to 142. This is, admittedly, small but the results are sufficiently striking to justify publication, particularly as they conform closely not only to our own experience among the child population of the city generally, but also to the results obtained by Glenny with guinea-pigs.

TABLE V

Analysis of results of Schick test in children in institutions after treatment with alum-toxoid and toxoid-antitoxin (all cases).

Prophylactic.	Cases.	Neg.	Pos.	Percentage negative.
Alum-toxoid ..	73	59	14	80·8
Toxoid-antitoxin	69	41	28	59·4

Taking the group as a whole, 80·8 per cent. of those treated with alum-toxoid were negative as compared with 59·4 per cent. of the toxoid-antitoxin cases. In view of the comparatively indeterminate character of the figures, it was decided to make a further analysis on the basis of the nature of the original Schick reaction. Following the usual procedure this had been classified as "slight," "moderate," or "marked," according to the character and extent of the resultant inflammation. Owing to the unexpectedly large number of negative reactors and the consequent reduction of material for the experiment, there would seem to be no doubt now when reading the results of the preliminary tests that there was a marked tendency to include among the "slight" group a large proportion of cases which in the ordinary course of events would be classified as negative, with a consequent vitiation of the ultimate figures. This assumptiom receives confirmation from Table VI., in which the results have been separately analysed for the three groups.

TABLE VI

Analysis of Schick tests carried out after treatment, according to the nature of the original Schick reaction.

Nature of original reaction.	Prophylactic.	Cases.	Neg.	Pos.	Percentage negative.
Slight	A.M.T.	34	29	5	79·6
	T.A.M.	36	27	9	75·0
Moderate ..	A.M.T.	20	17	3	85·0
	T.A.M.	29	13	16	44·8
Marked ..	A.M.T.	19	13	6	63·4
	T.A.M.	4	1	3	25·0

There is no material difference between the two subgroups in which the original reaction was classified as "slight." This is what one would expect if the majority of the children composing the group were originally negative and not positive (or even slightly positive). There was a strong element of doubt in the reading of the original reaction, so that the two sets of figures do not serve well for the purpose of comparing the relative merits of the two prophylactics. In the "moderate" group there is a striking difference between the end-results. The cases treated with alum-toxoid yield 85 per cent. of negative reactions, as compared with 44·8 per cent. yielded by those who received toxoid-antitoxin. There is a similar differentiation in the group classified as "marked"—63·4 per cent. of negative reactors with alum-toxoid and 25 per cent. with toxoid-antitoxin. Both these groups were composed of children who exhibited definite and unmistakable positive reactions with the preliminary test. Taking the two groups together the proportion yielding negative reactions after alum-toxoid is 76·9 per cent., as compared with 42·4 per cent. after toxoid-antitoxin. These are the significant figures, and there is little doubt that they reflect the relative efficacy of the two antigens.

It seems clear that alum-toxoid is a definite advance on toxoid-antitoxin. The figures adduced have received confirmation in the recently published work of Park and Schroder [4] who have shown, both in children and guinea-pigs, that it has given better results than either toxin-antitoxin or formol-toxoid. Two hundred and twenty-eight children immunised with alum-toxoid gave an immunity rate of 98·2 per cent., as against 90 per cent. with toxin-antitoxin and 93·7 per cent. with formol-toxoid.

CONCLUSIONS

1. These observations are based on experience of 436 children treated with alum-toxoid and over 7000 treated with toxoid-antitoxin.
2. Alum-toxoid is superior to toxoid-antitoxin in the prevention of diphtheria. It induces immunity more rapidly.
3. In epidemic periods, when rapid induction of immunity is essential, alum-toxoid is the best antigen.
4. When administered in properly graduated doses the reactions caused by alum-toxoid are not more severe than those caused by toxoid-antitoxin.

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Clinical and Laboratory Notes

IRRITATION OF THE VAGUS BY A TUMOUR OF THE CAROTID BODY

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THE condition of the autonomic nervous system known as vagotonia, representing functional derangement rather than gross structural alteration, has been regarded by Eppinger and Hess [1] as resulting from a disturbed balance of endocrine secretion. However little favour the endocrinological aspect of the theory has received, there can be no doubt that patients are occasionally encountered whose symptoms are most reasonably explained in terms of vagotonia. Such patients receive some benefit from the administration of atropine, but this often to a lesser degree than might be expected because usually only one set of branches of the vagus is seriously involved, and since the over-excited terminals are less susceptible to the action of the drug than are the normal ones.

Stimulation of the vagus by the pressure of neoplasms is recognised, although paralysis is more commonly observed. In any case, the visceral effects are not usually obtrusive. Carotid body tumours may excite the vagal functions, but so far we have not seen a record of such severe and long-continued over-activity as in the case presently to be described. Stanford Cade,[2] in a paper in which many references to the literature will be found, points out the frequency of pain due to the pressure of these tumours on the cervical plexus. This author also mentions that dyspnœic and syncopal attacks occurred in one patient in whom, moreover, digital pressure on the tumour caused a sensation of giddiness.

THE CASE DESCRIBED

The present case was that of a man, aged 36, who was admitted to the hospital in January, 1930, under the care of Sir James Purves-Stewart.

The patient was a labourer by occupation, and complained of abdominal pain, vomiting, and breathlessness. The pain was of a dull aching character, and was felt in the left side of the epigastrium where it began about one hour after each meal. From this point it spread upwards into the left side of the thorax and downwards into the left iliac fossa. Vomiting then occurred, giving relief of the pain. Some relief was also obtained by lying down or by taking bismuth. The occurrence of these symptoms, epigastric pain and vomiting, dated from August, 1928, a few weeks after convalescence from an illness diagnosed as pneumonia, and during the one and a half years of their duration the longest period of freedom was two days.

In December, 1929, the patient experienced severe giddiness and breathlessness, which subsequently abated, leaving breathlessness and palpitation on exertion only. Constipation was severe throughout the period of illness, and during the three weeks prior to the operation presently to be described the bowels were opened on five days only, with the help of purgatives and enemata. Loss of weight was complained of, but no accurate figures are available.

Examination of the moderately emaciated patient showed pallor of the skin and mucous membranes, and coated tongue. A tumour of firm consistency was palpable a little way below the left angle of the lower jaw, deep to the sternomastoid; it was not attached to the skin, and felt as though it was composed of "several glands matted together."

In the abdomen the upper part of the left rectus was rigid and tender; there was no cutaneous hyperæsthesia. The central nervous system and cervical sympathetic were normal. The vocal cords moved normally. The lungs were normal to physical examination. The respiration-rate was 20 to 25 per minute.

The pulse-rate at the time of admission was 80 per minute. It subsequently fell to 52 for a period of six days, but before operation it had risen to 80. Otherwise the heart appeared to be normal. The blood pressure was 110/75 mm. Hg.

The blood count was as follows:—

Red cells	3,630,000	Polymorph	70 %
White cells	8,400	Eosinophil	0
Hæmoglobin ..	53 %	Lymphocytes ..	27 %
Colour-index ..	0·7	Monocytes	3 %

The blood Wassermann reaction was negative.

Unfortunately, a fractional test-meal could not be carried out as the passage of the tube gave rise to distressing vomiting. A single examination of the gastric contents showed absence of free hydrochloric acid and a total acidity of 0·072 per cent. No occult blood was detected in the stools. A barium meal and radiogram of the chest showed no abnormality of the stomach, but there was 48 hours' delay in the ascending and proximal half of the transverse colon.

On Feb. 4th Mr. William Turner removed the tumour. The operation proved not easy, as the
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509³ Mrs Kennedy – Dr [illegible]
Diabetes mellitus
Probable bronchopneumonia.

Danielopolu and his co-workers[3] claim to have demonstrated that the carotid reflex is *amphitropic* in action; that is to say, it has both a pressor and a depressor component. The fluctuating pulse-rate of the present case can readily be understood in the light of this observation. The same conception as that of Danielopolu is implicit in a communication by Prof. R. J. S. McDowall to the Physiological Society.[4] This observer noted that when the carotid sinuses had been painted with cocaine, the application of warmth to the skin caused a marked fall in arterial blood pressure, but not in every case; in some of the experiments the vagi had been cut so that part of the response may have been made possible by loss of the vago-pressor reflex. The normal slowing of the heart beat which occurs when the vagus is compressed in the neck is due to pressure on the carotid sinus rather than on the vagus itself, and the giddiness which ensued when this was done in Stanford Cade's case, referred to above, probably represents an exaggerated example of this phenomenon.

The constipation was undoubtedly due to vagal stimulation, since it was relieved from the day following the operation. The reason why pathological stimulation of the pneumogastric nerve should cause constipation is not clear, since the physiological teaching is that the action of this nerve on the gut is to increase peristaltic movement; possibly spasm may be set up. It is noteworthy that in the present case there was no delay—rather the reverse—in the passage of contents through the stomach and small intestine, but that there was great retardation in the ascending colon and proximal half of the transverse colon. Both of these regions of the large intestine are innervated by the vagus, in contrast to the distal colon which is supplied by the sacral autonomic nerves.

As to whether in cases such as the present one the afferent or efferent fibres of the pneumogastric are chiefly affected is unknown.

We wish to thank Sir James Purves-Stewart and Mr. William Turner for permission to publish the case. To Dr. Braxton Hicks we are indebted for the histological findings, and to Dr. David de Souza for much helpful advice.

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THE BARIUM ENEMA IN THE DIAGNOSIS OF INTUSSUSCEPTION

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THE object of this short communication is to remind those engaged in the active treatment of acute abdominal lesions that the barium enema is of value in the diagnosis of doubtful cases of intussusception in infants. It is not claimed that the method is new, for papers have been published on the subject on the continent and in America as far back at least as 1913,[1] and while I was preparing these notes an example was published by Dr. Reginald Miller.[2] The text-book case of intussusception in an infant can be diagnosed with ease by the ordinary clinical methods of examination; but there are cases, usually of the subacute variety, in which diagnosis is not so simple. There is usually sufficient evidence to put the patient under suspicion, but insufficient to warrant an exploratory laparotomy. It is in these that the assistance of the barium enema settles the matter, as shown by the two cases described here. In advocating this additional diagnostic procedure, it is fully realised that it can only be carried out when working under ideal conditions. A competent radiologist with his X ray plant is required, and this usually means that the patient must be in a large hospital at a reasonable time of day.

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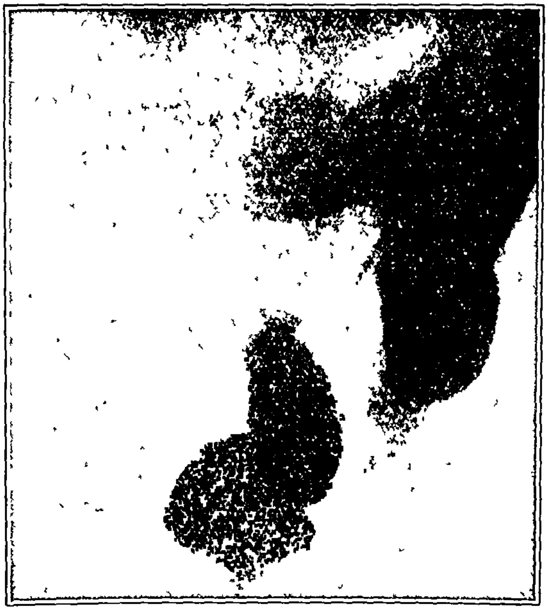
[1] Snow, I. M.: Amer. Jour. Dis. Child., 1913, vi., 93.

[2] Arch. Dis. Child., August, 1932, p. 201.

CASE 1.—Girl aged 2 years. First child; breast-fed. She was admitted on Feb. 2nd, 1930, with four days' intermittent attacks of colicky abdominal pain. There was no vomiting, and the bowels had been opened once, but the motion contained no blood or mucus. The child looked well, and on examination of the abdomen a tumour was felt just above the umbilicus. This, however, disappeared shortly after examination. On the following day, as the diagnosis was still in some doubt, a barium enema was given and the X ray taken by Dr. Geoffrey Fildes. This revealed the presence of an intussusception with the apex in the transverse colon (Fig. 1).

Laparotomy was performed immediately and the intussusception found almost reduced, presumably by the enema. Reduction was completed in the act of withdrawing the cæcum from the abdomen. It was of the ileocolic type. The patient made a good recovery.

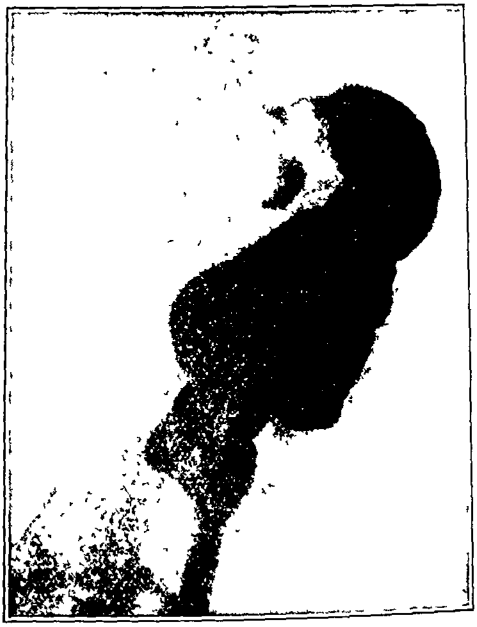
FIG. 1



Intussusception in the proximal half of the transverse colon.

CASE 2.—Boy aged 6 months. Admitted on August 10th, 1932. He was a first-born and breast-fed. Two days prior to admission the mother noticed that he was disinclined to take his feeds, and commenced to vomit. This was shortly followed by attacks of screaming. The bowels were opened the day before admission by means of castor oil, and no blood or mucus was then noticed by the mother. The child on examination appeared perfectly normal and healthy, except that a movable tumour could be felt just to the left of the umbilicus. The tip of the finger, after being inserted high into the rectum, was smeared by a little dark-coloured blood. Barium enema radiography was carried out by Dr. Bertram Shires, and this showed an intussusception, which had reached the left half of the transverse colon (Fig. 2). Operation was performed immediately and the intussusception reduced. It originated from the outer and lower part of the caput cæci. Recovery was uneventful.

FIG. 2



Intussusception in the distal half of the transverse colon.

The X ray appearances are characteristic, for the barium can be seen insinuating itself between the intussuscipiens and the intussusceptum, and also outlining the mucosal folds resulting from the concertina-like effect of the intussusception on the bowel. The position of the apex is also indicated at the time the picture is taken, but it must be remembered that the enema may in part reduce the intussusception, as in Case 1. This partial reduction should not be a temptation to postpone operation on the grounds that total reduction may occur.

As the opaque enema is a comparatively simple procedure, and the effect on the child merely that of discomfort, it seems reasonable to consider its use in doubtful and subacute cases, for the additional evidence obtained makes the diagnosis conclusive.

I am indebted to Sir Percy Sargent and Dr. R. C. Jewesbury for permission to publish the notes of these two cases.

SALFORD ROYAL HOSPITAL.—The annual report calls attention to a serious lack of adequate accommodation at this institution, to a great extent in consequence of "the rapid growth of specialised medical science." Plans for improvements have been prepared, but cannot be carried out for lack of means, and in the meantime an adjoining building is being temporarily taken over. The report of the medical board states there is still a good deal of unavoidable waiting for admission, particularly on the surgical side. The large number of industrial accidents and the increasing number of motor injuries occupy many beds which would otherwise be available for general surgical work. There is great difficulty, with the present inadequate out-patient accommodation, in dealing with the increasing number of patients who attend this department. It is added that of all the large hospitals in Manchester "the pathological department is the worst equipped." Notwithstanding these difficulties an out-patient clinic for cases of early mental disorder has been established under the Mental Treatment Act in collaboration with the Lancashire mental hospitals board. Dr. A. Corsar Sturrock, who has retired from the active staff of the hospital, is taking charge of the clinic.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF SURGERY AND MEDICINE

At a joint meeting of these sections on Nov. 2nd the chair was taken by Mr. HUGH LETT, President of the Section of Surgery, and a discussion on the

Treatment of Acute Appendicitis

was opened by Dr. J. A. RYLE. This problem, he said, was really a complex problem in judgment; it could not be decided by statistics or opinion, but only by a pooling of experience and careful analysis of clinical records and of the factors contributing to success and failure. The cultivation of judgment in modern medicine, however, had not proceeded pari passu with the cultivation of technique. Decisions might be warped as well as expedited by the knowledge that inaction might cause disaster. If Sir James Berry's address on Fallen Idols[1] had done no more than arouse thought and controversy, it had been valuable. A bare diagnosis of appendicitis was not enough; the stage and type of the pathological process must be visualised. There could be no antagonism between the medical and the surgical mind, and there could be no "always"; a best procedure for each contingency must be discoverable. Physicians tended too readily to visualise the worst and to be too vague in their images of what was happening. They saw to-day far fewer cases of acute appendicitis than the surgeon, but more often the "problem" case or the complicated case. Some surgeons of to-day stood in need of the "physicianary" qualities of an earlier age. Collaborations between surgical and medical minds were too rare in these rushed days. There was need for medico-chirurgical team-work.

Both personal experience and hospital figures suggested that the outstanding cause of mortality was still delay in diagnosis, while the most dangerous type and the type most often and easily missed was Wilkie's obstructive type. If there was obstruction there should always be immediate operation. It was characterised by pain, continuous or at first colicky, but always severe, and not accompanied by inflammatory symptoms such as pyrexia, increased pulse-rate, or rigidity. Surgical interference was not an appreciable cause of mortality. In the inflammatory type delay and medical treatment might be justifiable; interference in the "middle" period might be dangerous and cause spread of infection or ileus. The most difficult decision arose in cases first seen with symptoms of ileus or obstruction; in these cases especially, collaboration between physician and surgeon was desirable. Sometimes the patient might be tided over for a few days by medical measures, until greater localisation was obtained and operation became less risky.

The delay in diagnosis might be due to unwisdom of the patient, the parent, the schoolmaster or matron, the general practitioner or the surgeon. The chief thing to be desired of the general practitioner was greater knowledge of signs and symptoms and ability to recognise the obstructed type. Dr. Ryle's recommendations were as follows: (1) for the inflammatory case, the interval operation or—if operation were undesirable—a watching brief; (2) for circumscribed abscess, simple drainage at the most favourable moment, by the most favourable path and with the minimum of interference; (3) for the obstructive or gangrenous type, immediate operation; and (4) for the late case with distension and signs of obstruction, a consultation. The essential factors in the problem were alimentary rest for the patient and a mental picture of the pathology for the doctor.

A SURGEON'S VIEW

Mr. H. H. RAYNER protested at the suggestion that surgery was making no progress in this disease. The statement was based on the Registrar-General's return: that there had been a steady mortality-rate for the last 20 years. In fact, however, case-mortality had been more than halved in the last 20 years; the figures were not accounted for by increasing operation on mild cases which had previously recovered under medical treatment. There had been a remarkable increase in the number of cases, and the improvement in the operation figure was due to earlier and better diagnosis. The proportion of operations in the first 24 hours had increased considerably.

The terms "early" and "unperforated" appendix were not synonymous, but the proportion of unperforated appendices removed could only be raised by insisting on the need for early operation. An appendix might perforate at any time in an attack—or never. The mortality of removal of the unperforated appendix did not exceed 1 per cent.; it was therefore obviously the duty of the surgeon to urge immediate operation in all cases. To secure early and accurate diagnosis, the clinical features at the onset must be recognised. In practice the fundamental question was: Has this patient got acute appendicitis or not? This was more important than: Has this patient got an obstructive appendicitis or not? The doctor should not attempt to discriminate degrees of severity in the ordinary case. Many patients did not seek medical advice for two or three days, and a serious result might follow the lack of rest and unsuitable diet. The pain was often mild for the first day or so. The most difficult type of appendix to diagnose was the pelvic type, for there might be no physical signs except per rectum. The public—especially those in charge of children—needed some knowledge of early symptoms. Early operation under proper conditions reduced the risk of death from 14 per cent. to 1 per cent., greatly reduced morbidity, and obviated the risk of recurrence. "Proper conditions" included a suitable state of the patient; contra-indications were: senility, excessive stoutness, cardiovascular abnormalities, and severe arthritis. On the third day and afterwards there were grounds for prognosis and estimate of the pathological state. Patients seen for the first time at this stage were in a different class from those seen earlier. There were three types: the subsiding; those with localised peritonitis; and those with widespread peritonitis. Operation should be performed at once on patients with general peritonitis. About half the cases with localised peritonitis would settle down, but cases not operated on must be watched carefully, as they might deteriorate and lose their chance. Those who did not settle down might develop abscess. The following types were suitable for expectant treatment: (1) those in which muscular rigidity was localised to a comparatively small area of the abdominal wall; (2) those in which there was a palpable mass—if this subsequently became an abscess the patient did better after a later drainage operation than after an operation on an early abscess with a friable appendix at its centre. The indications for immediate operation were: (1) history of recent severe exacerbation of pain; (2) presence of marked acute tenderness; (3) evidence of toxæmia in the facies, pulse-rate, and temperature. The clinical and pathological features were the foundation of treatment.

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[1] THE LANCET, 1932, i., 1027.

The anæsthetic for toxæmic patients should be spinal or gas and oxygen; the additional toxic effect of ether was enough to turn the scale against the patient.

DISCUSSION

Dr. H. MORLEY FLETCHER agreed with both the openers. He found it difficult to interpret the contradictory statistics and suggested that a great many appendicectomies were performed in diseases (such as typhoid fever) for which the appendix was not responsible. There had been a great fall in the number of operations during the war period. One point should be strongly emphasised: operation should always be immediate in children. The ileocæcal glands should be examined, as sometimes they were acutely inflamed although the appendix was healthy. If inflamed they should be removed, to avert possible tuberculous peritonitis later. If the patient was seen on the third day and seemed quiescent, the starvation and bowel rest régime should be maintained.

Mr. R. DAVIES-COLLEY doubted if anyone would question the value of operation within the first 24 hours. In the middle stage there seemed to be a tendency to teach that the right routine was to watch, and only operate if things were going wrong; that even an abscess should be allowed almost to point through the skin before interference. He was strongly opposed to delay in that stage unless operation was definitely contra-indicated. Mortality in his opinion was not due to bad choice of a time but to bad technique. There was no great risk in operating on early spreading peritonitis, and the physical signs in these cases were very anomalous. One possible cause of death was faulty diagnosis. Appendicitis was three times less common in women than in men, but women figured quite largely in the Registrar-General's figures. Operation in the acute phase of salpingitis was well known to be dangerous. If there was any real doubt of the diagnosis it was better to wait and watch.

Dr. LEONARD FINDLAY was quite unable to reconcile the physician and the surgeon on this subject. What was wanted was not so much "judgment" as the ability to make a diagnosis. Whenever the diagnosis was made, operation should be performed. He had never regretted the ruling of immediate operation—at any rate in children. Surgeons did not sufficiently often ask the physician to help in diagnosis. Cases of pyelonephritis, cystitis, and lobar pneumonia had all been operated on for appendicitis. It was a good rule to say: If you can't find anything and you suspect appendicitis, behave as if it were appendicitis. He had seen several severe cases of delayed anæsthetic poisoning after up-to-date ether anæsthesia.

Mr. JOHN MORLEY thought that it was not sufficiently realised that in the very early hours of the attack the localised tenderness and rigidity were often quite absent and examination revealed nothing. The patient simply complained of diffuse colicky pain in the upper abdomen. Occasionally Wilkie's fulminating peritonitis was seen, but Wilkie seemed to suggest that early cases could be divided into inflammatory and obstructive types. Mr. Morley, however, thought that a large majority of cases were obstructive, but that cases varied very much in the speed of progress. There was no means of telling which would be fulminating and which benign. A good deal depended on the position of the perforation; some of the worst were at the base of the appendix, allowing gas and fæcal contents to leak from the cæcum. Another factor was the position of the appendix; the pelvic appendix was sinister. The old teaching on cutaneous hyperæsthesia had, he was glad to gather, been dropped. Spinal anæsthesia was very much safer than general; the surgeon could operate with much less trauma to the patient and much greater ease to himself.

Mr. A. J. WALTON thought there were three distinct pathological types: (1) Wilkie's; (2) one in which the infection began as a colitis and localised in the appendix; and (3) a hæmatogenous type, as seen after influenza epidemics. Clinically, however, it was often quite impossible to distinguish the types, and there was no value in attempting to recognise them. Statistics were valueless. The real problem was the third-day appendix. No good could be gained by leaving a diffuse peritonitis; such a case must be drained. Nor was it any use leaving a gangrenous appendix. He did not believe there was such a thing as a "subsiding" appendix; it might perforate at any time. There was a danger of spreading infection from a localised abscess, but technique should overcome this. The interim operation had a high mortality; there might be dense adhesions and a caseous mass inside. Thus, he advised urgent operation in all cases. The one exception was the very fat patient, and that was the danger of any operation and not of appendicectomy. To do the greatest amount of good to the greatest number of patients there was only one rule: operate as soon as you can.

Mr. HERBERT BROWN stressed a risk of operating on an apparently simple abscess in the middle of the first week; until the end of the first week there was no general immunity, and swabbing the cavity might disturb the protecting lymph layer, causing fatal septicæmia. In no circumstances, he thought, should an abscess cavity be manipulated before the end of the first week. The only treatment for the septicæmia would be intravenous mercurochrome. The only septicæmia he had seen in an "early" case (more than 24 but less than 48 hours) had followed a perforation at the base, which had been crushed, thus driving organisms into the blood.

Mr. J. B. HUNTER argued for immediate operation. At University College Hospital, he said, where all cases were operated on immediately they were diagnosed, the total mortality had been about 3 per cent. In children the necessity was urgent. The mortality-rate over the age of 10 was about 2 per cent., and under that age about 8 per cent. Nobody could tell what was happening in an abdomen.

Mr. ZACHARY COPE was certain that there were cases in which it was better to wait. If the appendix was known to have perforated and there was a lump, the resistances of the patient were combating it, and if the lump steadily became smaller the result of operation would be better after a few days' semi-starvation and rectal fluids, when the pus was thicker. Delay was also helpful for generalised peritonitis, as a limited operation might become possible. Ileus with a rapid pulse should also be treated expectantly, with gas gangrene serum. To say that operation should always be performed at once was to allow the clinician no judgment at all. Typhoid might be very difficult to diagnose in children; he had seen a true ulcerative appendicitis in typhoid fever.

The PRESIDENT recalled the discussion on this subject at the Medico-Chirurgical Society in 1905, when the mortality had been enormous: 75 per cent. for peritonitis. At the London Hospital only 6 per cent. of the cases operated on had not been complicated by abscess or peritonitis. In 1912–13 the figure had been more like 54 per cent. The mortality-rate was 4·3 per cent. in the later series, whereas in the original series it had been 24 per cent. In the old days the Trendelenburg position had been the rule for all abdominal operations, and the saline treatment had not been introduced. Very great judgment was called for in the third to fifth-day cases; when in doubt he thought it better to operate. It was not wise to broadcast any advice to delay, as the surgeons with smaller experience throughout the country might tend to delay in those cases in which operation was essential.

Dr. RYLE, in reply, said that no broad basis of agreement had been reached. If Mr. Walton's doctrine were broadcast it would be as productive of disaster as Sir James Berry's. Surgical skill throughout the country was not uniform. The decision had to be made in the individual case every time. Judgment could be cultivated and trained. Any extreme would be bad as a general doctrine for the profession.

Mr. RAYNER confirmed Dr. Ryle's concluding words, and disagreed with Mr. Walton. The surgeon should not be stampeded into unnecessary or premature operation because he could not tell what was going on inside the abdomen. A maintained high temperature suggested gangrene however well the patient might feel, and there was always some such indication. A subsiding appendix was one that was rapidly approximating to normal, and the surgeon surely had an idea of the normal abdomen. He had not found any risk in the interval operation. The longer the case took to subside, the longer should operation be delayed; at least two months should always elapse.

SECTION OF PSYCHIATRY

A MEETING of this section was held on Nov. 8th, when Dr. H. DEVINE gave his presidential address on the

Problem of Schizophrenia

He said that although much important psychological, biological, and clinical research has been carried out on schizophrenic patients, we are still not in a position to state in a few words why these patients are ill, or how to cure them. Recent statistical studies of the results of various forms of active treatment had shown that the remission-rate among treated cases does not differ materially from that among untreated cases. To the psychiatrist whose work is confined to mental hospitals the dementia præcox problem was a very real one, since a large majority of his confirmed cases were schizophrenics. The picture of regression presented by such patients was peculiar. They lived in a world of their own, shunned social contacts, were indifferent to their environment, comfort, or appearance; they exhibited curious mannerisms; many had to be washed, dressed, and fed, and were it not for nursing care they would cease to exist. They lived in a state of spiritual isolation from their fellows; wealth, success, knowledge, culture, and even love, meant nothing to them. In spite of outward appearances these patients were not devoid of an inner psychic life. Observation of advanced schizophrenics had shown them to be aware of their surroundings and they all had the capacity for remembering past events. A katatonic and inaccessible patient might suddenly exhibit a change of phase and loquaciously pour out a stream of delusional talk, revealing thus an unsuspected richness of inner experiences.

In dealing with such non-coöperative patients the psychiatrist was at a disadvantage, for the patient's delusional outlook was so remote from normal thought that there could be no mutual understanding between doctor and patient such as obtained in other kinds of illness. The morbid thoughts which surged into the patient's consciousness, and which he expressed in symbols, described experiences which struck no emotional chords, because the listener was unable to draw upon anything within the range of his waking experience which was commensurate with that of the patient.

But a normal person had experiences when asleep which might enable him to understand in some measure the phenomenal world of the schizophrenic. Jung suggested that if the dreamer should go about performing actions we should have the clinical picture of dementia præcox. Perhaps even more allied to schizophrenic experiences were these temporary psychoses to which we all might be subject under the influence of various kinds of physiological stress.

Schizophrenia was not a rigid disease entity of known causation and of more or less uniform course and outcome. It would seem permissible to take the view that given certain conditions everyone is liable to exhibit schizophrenic reactions.

INNER LIFE OF THE SCHIZOPHRENIC

The cognitive, sensational, and intellectualistic schools of psychology provided us with no knowledge of human nature. Similarly, the idea so dear to Kraepelin, Nissl, and Alzheimer that the primary object of scientific psychiatry should be the study of the cellular modifications of the cerebral cortex, and their relationship to the symptoms manifested during life, did nothing to enable us to understand our psychotic patients as suffering and bewildered personalities. It was only when Freud and Jung began to seek for the origin of the phantasies of the neurotic and the insane in the unconscious biological tendencies, and the pathologist began to investigate the internal secretions and the physiological behaviour generally of these patients, that we were able to gain some understanding of the why and wherefor of their symptoms. It was not difficult to see in certain psychoses the happy realisation of desires that had never been adequately satisfied. Wish-fulfilment mechanisms were quite frequent in benign psychotic conditions.

Dr. Devine described various patients whose morbid psychic productions were of the non-logical autistic type, and who showed a symptomatology which bore a striking resemblance to that of certain myths and fairy stories: the magic key which opens the door to the secrets of life; the transformation of a weakling into a "Samson" with supernatural strength; an elaborate revival of the foster-parent phantasy; and the magical change of human beings into malignant insects. The cases showed the curious duality of the psychic life that was so universally observed in schizophrenic patients. On the one hand was the phantasy life; on the other, the normal personality with its memories intact and with a rational understanding of things in general. Another interesting feature of these cases was the relative coherence of the phenomenal experiences which surged into consciousness, in contrast with the fragmentary psychic productions in acute manic psychosis. The patient who observed that his visions were so vivid and real that it was just as if he were at the cinematograph aptly described the state of affairs in some cases. The phantasies of the schizophrenic are essentially dynamic and alive. *They expand, grow, and elaborate themselves.* The plot thickens and becomes more and more involved; and the players become more numerous. These generalisations in regard to the inner life of the schizophrenic might only be true for a certain number of cases, since "schizophrenia" and "dementia præcox" were wide terms, but Dr. Devine took the view that the inner life of the schizophrenic, even in long-standing cases, was often much richer than it would appear to be on the surface. He had made prolonged studies of individual cases to discover the drama which lay behind the mannerisms, neologisms, and fragmentary references made to "voices" and delusions. He held that a fundamental reason for the apparent incoherency of the psychic productions in many of our patients was that we are here dealing with affectively determined symbolic thought processes, the meaning of which could not be coherently stated by the patient. Though he did not hold any particular theory of dream psychology, he said, it was obvious that these psychic states must have a history (Freud), must have a bearing on current conflicts (Rivers), and, like all mental processes, they must reach out into the future (Jung). On the surface, the psychotic content in these cases exemplified the view of Rivers that a dream is the solution or attempted solution of an existing conflict. However this might be, it was evident that the psychotic content in these cases was symbolic in character. As the external world was shut off, the imagery, as in dreams, was naturally visual; there was, as it were, a silent interchange of thought without the use of verbal symbols.

Dr. Devine regretted the dearth of clinical investigation on the content of the psychoses, such as those of August Hoch. Hoch had shown that while an outside view of dementia præcox revealed an arbitrary array of manifestations, of delusions, hallucinations, queer notions, and an emotional condition often out of harmony with what the patient said, peculiar incoherent utterances, and bizarre acts—an analysis often showed that all these experiences mean something to the patient, that certain mechanisms are at work, and that there is, in these manifestations, a certain limitation to definite trends. The scattered and fragmentary speech gave an impression of incoherence because the connecting links were hidden from the observer.

Psychologically the consciousness of the schizophrenic was fuller than normal consciousness. The source of the psychotic symbolism was to be located in the conative-affective tendencies, the intellectual functions of many schizophrenics being remarkably unaffected. The development of definite psychotic material sometimes led to a cessation of tension, and was associated with a feeling of tranquillity and certainty such as the patient had not hitherto experienced. A study of the past history of these cases created the impression that the whole life had been emerging to its solution in the psychosis in an inevitable kind of way. When the delusion emerged doubt and uncertainty were dispelled; and as the patient looked back on his past life he felt that his delusion explained all to him that had been mysterious and strange. Evidently in some cases the psychosis expressed some fundamental need.

Schizophrenia was aptly described as a biogenetic psychosis, since its symptoms were manifested, not primarily in deterioration of the intellectual functions, but in disorders of the vital tendencies that were shared in common with all living creatures from the amœba upwards. In Dr. Devine's view, the importance of Freud's contribution to general psychiatry could be summed up in the fact that he deflected our attention from somewhat fruitless researches on the histology of the brain in this disease, which it was assumed would reveal its nature, and directed our attention to the organism itself and its biological cravings.

SCHIZOPHRENIA AS A HISTORICAL PROCESS

The psychiatrist saw the psychosis as the culmination of a series of events and processes, recent and remote, individual and racial, that had left behind indelible impressions upon the organism and were, indeed, part of its being. The psychosis could indeed only be interpreted as a historical process. The family traits, taints, indiscretions, illnesses; the psychic type; the endocrine pattern; the physique, organ inferiorities, dysplasias; the temperament; the tendency to pronounced fluctuations in the rhythm of the psychic processes—all these inborn peculiarities that not only predispose to a psychosis, but also determine its form and type, constituted the *hereditary unconscious.* The prenatal influences; the manner of birth; the family environment; the conditioning of the sexual life; the stresses, failures, life-wounds; the development of "faulty habits of reaction"; the bodily health—infections, septic foci, illnesses, unwise modes of living—all these factors which are liable to exert a baneful influence upon the psychic development constituted the *personal unconscious.* Thus historical events, both ancestral and personal, were condensed into the present and constituted the unconscious determinants of a psychosis. These unconscious determinants could be observed from the physiological standpoint.

Though no specific pathology of the disorder had been elucidated, the fact that it showed a prediction for the offspring of "tainted" heredity and of special constitutional types, could only mean that one or more physical "susceptibility" factors were in operation. One could assume that the concomitant metabolic peculiarities which had been discovered were significant of the physiological processes. It would seem probable that the reactions deviating from the normal had as their basis disturbances of one or more of the fundamental biochemical reactions of body, and especially of the central nervous system itself—changes, for instance, in tissue respiration and metabolism.

In the study of the problem which schizophrenia presents it was essential that we should cease to think of mind and body, but only of the living being and life. The problems of psychiatry were too deeply involved with disturbances of the physiological behaviour to enhance a purely psychological theory of the unconscious. For the psychiatrist the "unconscious" must include all the morbid processes, sequences, and changes revealed by objective methods of study, whether they be biochemical, histological, or psychological. The whole resources of medicine were required to solve the obscure problem of schizophrenia.

RECENT DEVELOPMENTS IN TREATMENT

In concluding his address, Dr. Devine referred to recent developments in the treatment of schizophrenia by pyrexial or shock therapy, which had met with some degree of success; by stimulation of the respiratory centre by intravenous injection of sodium cyanide; by cerebral stimulation produced by a mixture of carbon dioxide and oxygen. The most favourable and striking results from cerebral stimulation occurred in those patients who had been mute and inaccessible for long periods of time. A number of patients carried on conversations; one was markedly facetious and made remarks typical of talkative hebephrenic dementia præcox. Some of the patients appeared frightened when cerebral stimulation developed, but became calm and at ease when efforts were made to reassure them. The cerebral stimulation, as evidenced by free muscular movements, animated features, and ability to carry on a conversation and carry out requests, lasted from 2 to 25 minutes. After a variable period, the retrogressive changes began. Gradually, the voice became less audible; the response to questions became halting with long lapses; the facial expression became set; eye movements ceased; and attention could no longer be obtained. The muscular rigidity recurred. and in the course of two or three minutes the patient lapsed into his former state of mutism. negativism, and inaccessibility. Another recent method of treatment was the induction of a profound narcosis by injection of sodium amytal. Bleckwenn and others had obtained good results with intravenous injection of from grs. 10 to 15 of the drug. followed by daily intramuscular injections. Some patients awoke from the sleep thus induced in a more or less normal mental state, and remained so for a time, sometimes from 5 to 15 hours a day, during which they took their food, though having previously been negativistic and artificially fed. In the lucid intervals it had been found possible to elicit information from the patients which might have some bearing on the development of the psychosis.

Mlle. C. Pascal and her co-workers were also utilising chemical methods of stimulation in schizophrenic patients, using what she termed the "psycho-analytical pharmaco-dynamic" method. A variety of chemical stimulants were employed, either alone or in combination. These included: ether (inhalation); chloral hydrate of cocaine; sulphate of strychnine; hashish; mescaline; and nitrous oxide (inhalation). In certain cases music and songs had been utilised to amplify the psychosensorial excitation. When the stimulation was successful in breaking down the barrier of negativism, especially the mutism, an attempt was made to explore the psychic life and to penetrate the autism. The "analysis" was not strictly in accordance with the technique of psycho-analysis. The investigation was carried out by conversations patiently and firmly directed; association with dynamogenic words; the stimulation of emotional experiences by the presentation of such objects as photographs and letters; and sometimes by the evocation of traumatic experiences which stimulated strong affective reactions. No attempt was made to interpret symbols; this exploration of the psychic content was only intended to afford clinical information in a manner as objective as possible. In those patients in whom stimulation was successful it produced an altogether new psychic level. The most negativistic patients changed their affective attitude; they became amiable and polite, and the barrier of mutism and hostility fell like a mask. After the stimulant ceased to operate it had been possible in some patients to follow the psychic rhythm; the effort to maintain a state of equilibrium, the partial or complete check to reintegration, and the progressive or abrupt return to disintegration.

Though investigations such as these did something to satisfy the therapeutic impulse, their purpose was primarily intended to give precision to diagnosis and prognosis. The chemical stimulants serve to dissociate the reversible or functional lesions from those which are irreversible or structural. They reveal the dynamic possibilities of the schizophrenic patient. and separated the elements which are modifiable and unstable from those which are static and immovable. It was found possible to divide the patients treated by the pharmaco-dynamic method into five categories. Highest in the scale were the dynamic group with prevalence of reversible lesions; and lowest in the scale were the deficiency group with unmodifiable lesions. Between these groups were patients who exhibited, in varying degrees, the phenomena of life and death, the fragments of wealth and of destitution.

Though these researches were interesting and important, it could not be claimed that any notable advances in the treatment of schizophrenia had been achieved. Nearly 30 years ago Dromard had observed: "The precocious dement is a rich man whose capital is immobilised. Later he becomes a pauper." If this aphorism expressed a truth, and up to a point Dr. Devine believed that it did, it served to emphasise the urgent need of treatment and investigation in the very early stages of schizophrenia.

SECTION OF OTOLOGY

AT a meeting of this section on Nov. 4th, with MR. J. F. O'MALLEY, the President, in the chair, a discussion took place on the

Treatment of Lateral Sinus Thrombosis

MR. E. A. PETERS, in opening, reminded his hearers that the sigmoid sinus and the superior and inferior petrosal sinuses formed a triangle which drained the blood from the petrous bone. Following mastoid sepsis, small vessels might thrombose, and the clot might extend to the sinus and its connexions, causing a fatal diffluent thrombosis. Or the organisms from this zone—usually the hæmolytic streptococcus—might enter the blood stream and produce a bacteræmia, or, later, a septicæmia. There was the possibility, also, of the formation of a mural or parietal clot due to the sinus being surrounded by infected bone or by a perisinous abscess under pressure. Thrombosis due to endothelial inflammation from within was responsible for a more chronic form.

The common post-operative thrombosis of general surgery gave opportunities for prophylactic treatment, but that was not so in the acute cases under consideration. The mainstay in aural cases was incision of the membrana tympani early, eradication of the septic focus, and serum treatment. Arbuthnot Lane, in 1888, was the first in this country to open the sigmoid sinus. He emptied the sinus until he came to healthy clot, and then ligatured the internal jugular. The child recovered. The first to deal with the jugular bulb in a drastic manner was Grunert.

The primary and most important step in treatment was the eradication of the septic otitis. In all cases of acute mastoiditis the dura mater and lateral sinus should be exposed. In the presence of discoloration of the transparent blue wall, or a lack of pulsation, or the presence of clinical signs, the cavity should be mopped out with hot hydrogen peroxide, and needle puncture should be carried out. Where there was evident clotting the vein was excised and "bipp" on a plug was passed down to the bulb, but not experiences which surged into consciousness, in contrast with the fragmentary psychic productions in acute manic psychosis. The patient who observed that his visions were so vivid and real that it was just as if he were at the cinematograph aptly described the state of affairs in some cases. The phantasies of the schizophrenic are essentially dynamic and alive. They expand, grow, and elaborate themselves. The plot thickens and becomes more and more involved; and the players become more numerous. These generalisations in regard to the inner life of the schizophrenic might only be true for a certain number of cases, since "schizophrenia" and "dementia præcox" were wide terms, but Dr. Devine took the view that the inner life of the schizophrenic, even in long-standing cases, was often much richer than it would appear to be on the surface. He had made prolonged studies of individual cases to discover the drama which lay behind the mannerisms, neologisms, and fragmentary references made to "voices" and delusions. He held that a fundamental reason for the apparent incoherency of the psychic productions in many of our patients was that we are here dealing with affectively determined symbolic thought processes, the meaning of which could not be coherently stated by the patient. Though he did not hold any particular theory of dream psychology, he said, it was obvious that these psychic states must have a history (Freud), must have a bearing on current conflicts (Rivers), and, like all mental processes, they must reach out into the future (Jung). On the surface, the psychotic content in these cases exemplified the view of Rivers that a dream is the solution or attempted solution of an existing conflict. However this might be, it was evident that the psychotic content in these cases was symbolic in character. As the external world was shut off, the imagery, as in dreams, was naturally visual; there was, as it were, a silent interchange of thought without the use of verbal symbols.

Dr. Devine regretted the dearth of clinical investigation on the content of the psychoses, such as those of August Hoch. Hoch had shown that while an outside view of dementia præcox revealed an arbitrary array of manifestations, of delusions, hallucinations, queer notions, and an emotional condition often out of harmony with what the patient said, peculiar incoherent utterances, and bizarre acts—an analysis often showed that all these experiences mean something to the patient, that certain mechanisms are at work, and that there is, in these manifestations, a certain limitation to definite trends. The scattered and fragmentary speech gave an impression of incoherence because the connecting links were hidden from the observer.

Psychologically the consciousness of the schizophrenic was fuller than normal consciousness. The source of the psychotic symbolism was to be located in the conative-affective tendencies, the intellectual functions of many schizophrenics being remarkably unaffected. The development of definite psychotic material sometimes led to a cessation of tension, and was associated with a feeling of tranquillity and certainty such as the patient had not hitherto experienced. A study of the past history of these cases created the impression that the whole life had been emerging to its solution in the psychosis in an inevitable kind of way. When the delusion emerged doubt and uncertainty were dispelled; and as the patient looked back on his past life he felt that his delusion explained all to him that had been mysterious and strange. Evidently in some cases the psychosis expressed some fundamental need.

Schizophrenia was aptly described as a biogenetic psychosis, since its symptoms were manifested, not primarily in deterioration of the intellectual functions, but in disorders of the vital tendencies that were shared in common with all living creatures from the amœba upwards. In Dr. Devine's view, the importance of Freud's contribution to general psychiatry could be summed up in the fact that he deflected our attention from somewhat fruitless researches on the histology of the brain in this disease, which it was assumed would reveal its nature, and directed our attention to the organism itself and its biological cravings.

SCHIZOPHRENIA AS A HISTORICAL PROCESS

The psychiatrist saw the psychosis as the culmination of a series of events and processes, recent and remote, individual and racial, that had left behind indelible impressions upon the organism and were, indeed, part of its being. The psychosis could indeed only be interpreted as a historical process. The family traits, taints, indiscretions, illnesses; the psychic type; the endocrine pattern; the physique, organ inferiorities, dysplasias; the temperament; the tendency to pronounced fluctuations in the rhythm of the psychic processes—all these inborn peculiarities that not only predispose to a psychosis, but also determine its form and type, constituted the *hereditary unconscious*. The prenatal influences; the manner of birth; the family environment; the conditioning of the sexual life; the stresses, failures, life-wounds; the development of "faulty habits of reaction"; the bodily health—infections, septic foci, illnesses, unwise modes of living—all these factors which are liable to exert a baneful influence upon the psychic development constituted the *personal unconscious*. Thus historical events, both ancestral and personal, were condensed into the present and constituted the unconscious determinants of a psychosis. These unconscious determinants could be observed from the physiological standpoint.

Though no specific pathology of the disorder had been elucidated, the fact that it showed a prediction for the offspring of "tainted" heredity and of special constitutional types, could only mean that one or more physical "susceptibility" factors were in operation. One could assume that the concomitant metabolic peculiarities which had been discovered were significant of the physiological processes. It would seem probable that the reactions deviating from the normal had as their basis disturbances of one or more of the fundamental biochemical reactions of body, and especially of the central nervous system itself—changes, for instance, in tissue respiration and metabolism.

In the study of the problem which schizophrenia presents it was essential that we should cease to think of mind and body, but only of the living being and life. The problems of psychiatry were too deeply involved with disturbances of the physiological behaviour to enhance a purely psychological theory of the unconscious. For the psychiatrist the "unconscious" must include all the morbid processes, sequences, and changes revealed by objective methods of study, whether they be biochemical, histological, or psychological. The whole resources of medicine were required to solve the obscure problem of schizophrenia.

RECENT DEVELOPMENTS IN TREATMENT

In concluding his address, Dr. Devine referred to recent developments in the treatment of schizophrenia by pyrexial or shock therapy, which had met with some degree of success; by stimulation of the respiratory the floor of the tympanum. Cases of that kind were often diagnosed as aural bacteræmia. It should be widely known that mastoid tenderness might be absent in this disease; of the last ten cases of sinus thrombosis which he had seen only two showed mastoid tenderness.

Mr. F. HOLT DIGGLE (Manchester) said the vein was tied in fewer cases now than hitherto, because of treatment by sera and synthetic bactericides. It was not always necessary to expose the bulb, for it could be drained through a catheter whose end protruded from the neck. If a case was so severe as to require ligature, the vein should be tied at two points and the intervening portion should be removed.

Mr. ERIC WATSON-WILLIAMS (Bristol) said he could not see any objection to tying both jugular veins; he had several times done both within a week, and once he had tied them at the same sitting. Pulsation should be estimated by both view and touch; pulsation in a thrombosed sinus was more easily felt than seen, whereas in a sinus with blood in it, pulsation was more easily seen than felt.

LIVERPOOL MEDICAL INSTITUTION

Diabetic Lipæmia

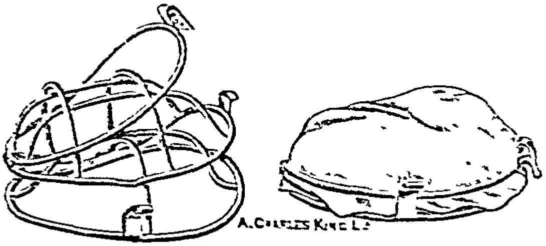
AT a meeting of this institution held on Oct. 27th, Prof. R. E. KELLY being in the chair, Dr. D. H. COLLINS summarised the clinical evidence of disordered fat-metabolism in diabetes, and discussed the types of lipoids in blood, and their relative significance in various conditions associated with high blood-fats. Evidence was given that diabetic lipæmia was endogenous in origin, as compared with the exogenous type following fat-feeding. Rückert's hæmolipokrit was described, and its reliability compared with the Schimidzu method of blood-fat estimation. The hæmolipokrit had the advantage of requiring neither special technique nor special apparatus, and only a small amount (0·15 c.cm.) of serum. Tables were shown giving the blood-fat readings taken by the hæmolipokrit in a series of cases. In 55 non-diabetics the average serum fats were 0·571 per cent. and in 103 diabetics under treatment, 0·818 per cent. There was an exaggeration of the lipæmia in cases with glycosuria, and a further increase in those with acetonuria. The following conclusions were reached: (1) that the more severe cases of diabetes as judged by other standards presented higher blood-fats; (2) that there was no parallelism between the variations of the sugar and of the fat content of the blood, and that the latter is more stable; and (3) that insulin when given in large amount decreased the blood-fat concentration. The opinions of other workers that a high fat content of the blood was of ill omen in diabetes was confirmed. A suggested explanation of the lipæmia in diabetes was that as the katabolism of carbohydrates was interfered with to a greater or less degree, so the mobilisation of fats was provoked in order to meet the calorific requirements of the body. Lipæmia was apparently a symptom of diabetes, which could be estimated and recorded, if additional guidance was required in diagnosis, prognosis, and treatment.

In the discussion which followed Dr. J. R. LOGAN said he had seen a case of fatal diabetic lipæmia in 1881, the first time the condition was diagnosed in the living. In this case, although there was an enormous amount of fat in the blood, the urgent symptoms terminating with coma had apparently only lasted about seven hours. How such a profound change could take place in so short a time was not easily explained even now.—Dr. E. CRONIN LOWE pointed out that there was a clinical value in knowing something more about fat metabolism in diabetes. Acetonuria, he said, was invariably associated with this increase in blood lipoids. Although in advanced cases, and those showing the presence of acetone in the urine, it would be of advantage to record any abnormal finding in the lipoid content of the blood, it was unlikely to be of clinical value in ordinary cases of diabetes.

NEW INVENTIONS

A MASK FOR USE WITH CHLOROFORM CAPSULES

CHLOROFORM capsules, as suggested by Mr. L. C. Rivett, have been used for some time in the second stage of labour at the Middlesex Hospital. The method of administration was to break one of the capsules, and to insert it into a Schimmelbusch mask in such a way that it lay between one of the cross-pieces of the mask and the lint covering. In practice this method has shown two drawbacks: (1) The chloroform evaporating in the intervals between the pains led to an uneconomic use of the capsules. (2) There was a danger of chloroform falling on to the face. In order to obviate these defects a Bellamy Gardner mask has been modified so as to interpose a layer of lint between the capsule and the patient's face. This mask was chosen as it is better adapted to fit the face in preference to the Schimmelbusch, which was devised for open administration of chloroform by the drop method. A small wire frame was made to go inside the mask, hinged to it on one side with a clip fastener on to the other. The wires constituting the dome of the mask were slightly cranked in order to give half an inch of clearance over the inner frame at its highest point, leaving a chamber for the chloroform capsule. To make up the mask two pieces of lint are taken, 8 by 6 in. One is placed in the original frame of the mask, a chloroform capsule is put in the inverted frame and broken. The second layer of lint is placed over this and the small frame closed, thus enclosing the capsule.



Mr. Leslie Williams has suggested [1] that the method may lead to overdosage owing to too concentrated a vapour being used. If, however, the mask is removed at the end of each pain and a new capsule is not inserted until the administrator is satisfied by placing the mask over his/her face that the vapour has become weak, then such an accident is outside the range of possibility. The mask has been made for me by A. Charles King, of Devonshire-street, W.1. The chloroform capsules are manufactured by Martindale and Co.

L. H. LERMAN, M.R.C.S. Eng.,
Senior Resident Anæsthetist, Middlesex Hospital.

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[1] THE LANCET, Oct. 8th, p. 804.

tightly packed. This limited infection from the diseased area and prevented bleeding.

In the chronic mural cases the central part of the clot broke down into an abscess, and the latter ulcerated through the walls of the vein. Incision of this abscess and drainage should result in healing. When there was extensive clotting, the clot might extend down the internal jugular, and it was evidenced by swelling and tenderness along the vein, and a chain of swollen lymphatic glands. The veins in such a case must be exposed and excised.

In early cases of thrombosis of the lateral sinus the internal jugular vein was empty and collapsed, and it had the appearance of a white goose-quill. With the object of limiting infection along the inferior petrosal, the speaker packed gauze between the bone and dura mater, the latter being exposed by clearing away the cells anterior to the sigmoid sinus. It was dangerous to obliterate both lateral sinuses. Lymphatic isolation could be obtained by inserting gauze, where possible, between the infected bone and the dura mater. When an infected labyrinth endangered the meninges, this isolation could be carried to an extreme by separating the auditory and facial nerves from the internal auditory meatus—i.e., by inserting gauze and dissector between the bone and dura mater anterior to the sigmoid sinus after removing the sublabyrinthine cells.

Mr. W. F. WILSON (Newcastle) said that the treatment of septic thrombo-phlebitis of the lateral sinus and other complications of middle-ear suppuration had made great advances during the last 50 years. Zaufal had first suggested the operative treatment of sinus thrombosis in 1880. Nowadays, thanks to more exact knowledge of middle-ear disease and its complications, and thanks to post-graduate teaching, cases were treated in hospital without delay, and early treatment was found largely to obviate the grave complications. In lateral sinus thrombosis one was faced with not only an acute septic focus more or less completely walled in by a barrier of inflammatory tissue reacting to the infection, but an acute focus which had ingress to the whole systemic circulation via the internal jugular vein, superior vena cava, right heart, and lung. Therefore a very thorough mastoidectomy was called for, clearing out all septic bone and pus pockets, from the highest retrozygomatic gallery of cells to the tip of the mastoid below. Then the lateral sinus was laid bare by the careful use of chisel and gouge.

When there was doubt in the surgeon's mind as to whether the sinus was involved, the mastoid wound should be left wholly open, and a moist antiseptic dressing should be applied to the cavity to keep the skin margins apart, this being changed as often as necessary. This procedure not only permitted surface drainage but allowed of easy inspection of the wall, and, if need be, puncture or incision for diagnostic purposes. Where one could be fairly certain that the thrombosis was confined to a limited portion about the sigmoid area, many surgeons would be content to pack off the lower part of the sinus and clear out the clot until free bleeding took place, without tying the jugular vein. His own feeling was that ligation of the internal jugular vein should be done wherever the thrombus reached down to the bulb—whether the clot was mural or completely occluding—for otherwise disintegration of the thrombus might occur and cause a continued infection of the blood stream. Also, the vein should be tied in every case which presented active symptoms of pyæmia. According to many well-known otologists, both in this country and abroad, the complete operation on the bulb was as a rule unnecessary. It was a serious addition to the radical mastoid operation together with the clearing out of the sinus, and the facial nerve was frequently injured in the operation.

Mr. Wilson gave the results in 56 of his cases of lateral sinus thrombosis. A large proportion of his first group of 42 cases were admitted with a history of previous rigors, and with pyæmia or septicæmia. In the cases operated upon the usual procedure was to do an adequate mastoidectomy, with wide exposure of the sinus and a thorough clearance of the clot or other sinus contents, and the immediate control of bleeding by inserting "bipped" gauze between the sinus walls and the overlying bone, sometimes with ligation of the jugular vein. Of the 42 patients 22 recovered; in 5 there was no previous history of rigors. In a second group (14 cases) 9 were operated upon and all died; they were all very ill, and had either temporal lobe or cerebellar abscess, meningitis, and cavernous sinus thrombosis.

DISCUSSION

The PRESIDENT said it was important to emphasise in future text-books and in other ways that when a case had reached the stage in which there was tenderness or swelling of the jugular vein, death was almost inevitable. He agreed with Mr. Wilson that ligation of the vein should be carried out when the clot lay very low in the lateral sinus, for a clot in that situation might not drain readily through the open sinus.

Dr. DAN MCKENZIE said that his own policy was as follows: in easy cases in which the clot was accessible and could be removed entire, or almost so, the vein was not tied; in a grave case the vein was tied. But the problem was a difficult one.

Sir JAMES DUNDAS-GRANT pointed out that Macewen had remarkably good results in these cases without ligation of the vein, and he was a pioneer. This ligation was more an episode than the most important part of the operation; the exposure and treatment of the sigmoid sinus was much more vital.

Mr. T. B. LAYTON agreed with both openers that the chief part of the treatment of this condition was the complete removal of the septic focus in the bulb overlying the sinus; but he did not agree with their approach to the subject. The proper approach, he contended, was from the standpoint that thrombosis was a physiological process whereby Nature strove to prevent the invasion of the blood stream from the overlying osteitis, the rigors being regarded as evidence of a sudden and rapid infection by many organisms. In the operation he considered it was necessary to expose all the area of dura which naked-eye inspection showed to be diseased, carrying on until around the granulation area there was an area of normal dura.

Mr. SYDNEY SCOTT spoke of the value of the Queckenstedt-Tobey test—i.e., the reading of the cerebro-spinal pressure after lumbar puncture—as a means of diagnosis of lateral sinus thrombosis.

Mr. W. S. THACKER-NEVILLE (Darlington) argued the necessity, when doing a paracentesis, of carrying out a culture, and if this was septic, of opening the sinus. It was an important factor in prevention of grave sequelæ. If the patient had a temperature and the fluid showed hæmolytic streptococci he always opened the sinus.

Dr. DOUGLAS GUTHRIE (Edinburgh) said that in 500 consecutive cases of otitis in children, there were 80 of acute mastoiditis and only 2 of sinus thrombosis. A variety which deserved greater attention was primary thrombosis of the bulb; there was not then a clot within the sinus, but it was lower in the bulb, the infection having taken place through several of the well-designed charts and diagrams with which the book is illustrated. In a final section the commoner disorders of infancy and early childhood are briefly considered. Dr. John Fairbairn contributes a chapter on the maternity aspects of mothercraft, which in 21 pages provides a summary of the subject that is a model of its kind; Prof. John Mellanby on the Physiology of Lactation is less happy, in that his contribution would be more suitably placed in a book intended for general physiologists than in one for infant welfare workers. In referring to the book as a whole, in the course of a recent article (The Lancet, Oct. 1st, p. 745), we have commented on the meagre consideration given to the psychological aspects of mothercraft and the emotional relationship of mother and child. From the materialistic point of view we might add that the book would be of considerably greater value (especially to medical officers of infant welfare centres) if some space were allotted to the question of expense of the different feedings and articles of diet advocated. This might well take the place of the very detailed pages devoted to the immediate post-operative feeding of cases of pyloric stenosis, which in the great majority of cases is carried out in hospital. When these criticisms are made, however, the book remains one of real distinction and authority, which will be welcomed by all interested in the subject.

2. This small book contains the essay on Breast Feeding to which was awarded the Sir Charles Hastings Clinical Prize by the British Medical Association in 1932. The sentiments it expresses are unimpeachable. Dr. Housden rapidly convinces us that breast milk is the ideal food for babies, that infection is more liable to occur amongst the artificially fed, that an understanding of the normal baby is essential to a proper study of the art of medicine. From many of the case-histories and figures quoted, however, it is clear that even now this doctrine is not everywhere accepted, and we therefore hope the book will find its way to the unconverted. The technique of breast feeding and the commoner difficulties encountered are dealt with, and the book is profusely documented. We note that Dr. Housden believes in the hypodermic injection of expressed milk as a means of increasing breast secretion in difficult cases.

Materialism

By J. S. Haldane, Fellow of New College, Oxford; Honorary Professor, Birmingham University. London: Hodder and Stoughton, Ltd. 1932. Pp. 221. 3*s.* 6*d.*

Dr. Haldane has travelled a longish way in his philosophical pilgrimage since his Edinburgh days. He has not always been easy to follow; for by the time his readers had got some idea of what he meant in one of his books or essays he had moved further on himself and written another which did not say quite the same. But in the development of his faith there has been no inconsistency; its growth has been as coherent as his distinguished contributions to the details of physiology, and in this book of essays it seems to reach a mature expression which it has hardly achieved before, and a clarity in which some of his previous writings were, to some people, lacking. He began with the comparatively simple proposition that as a matter of experiment certain physiological processes, such as the uptake of oxygen by the blood, could not be explained, as some thought, by the known principles of chemistry and physics; this led to the argument that the working of the body cannot be dissected into its components because their sum is palpably less than the capacity of the whole organism; conscious behaviour is then brought into the field, and the something which is behind it, and finally the conclusion is reached, as a matter of experience, that the physical and spiritual worlds cannot be separated and that both find their reality in God—the "friend behind phenomena" of the Greek philosophers.

The eight essays of which the volume is made up were given as addresses on singularly diverse occasions —the opening of a medical school session, as president of the Institute of Mining Engineers, to the British Institute of Philosophical Studies, to the Liberal Jewish Synagogue, to the lunch-hour congregation at St. Martin's-in-the-Fields. The variety only emphasises his point that our experience is indivisible, and that all its items have a common background of spiritual reality. And thus Dr. Haldane moves, if we may say so, on to a level he has never reached before and preaches a religion of moving beauty and pursuasiveness, catholic in the widest sense. With theology and the systematics of organised religion he has little immediate concern; he indicates why he cannot give his personal adherence to any particularised creed or to any belief in a future life with rewards and penalties for what we do here. Let us realise, he says, that the physical world with which we are daily concerned, and about which it is so interesting and useful to find out all we can, is at best a very imperfect representation of reality. Those who have ears to hear will read the book with pleasure and advantage; those who have not will not understand what it is about, though even they will hardly grudge its modest price.

Manuel pratique de dermatologie

By A. Desaux and A. Boutelier. Paris: Masson et Cie. 1932. In 2 volumes. Pp. 1120. Fr.260.

This is a delightful book which presents dermatology in a comprehensive manner from the French angle. The authors belong to that famous St. Louis school which produced L. Brocq, Sabouraud, and Darrier, and others whose names stand for dermatological progress.

The first volume is divided into four parts. Part 1 gives general procedures, which include interrogation of the patient, examination of the stripped body in a good light, and a study of the elements of the eruption, its composition, and its localisation; these most useful "conseils" are followed by a brief section on the diagnosis of pruritus without visible cause. Ignoring for the moment Part 2, Part 3 deals also with diagnosis, that of the lesions presented, while the concluding section of the volume—Part 4—concerns itself with regional localisation and the assistance it can give to the investigator. The museum of the St. Louis Hospital supplies practically all the half-tone illustrations (none of them in colour), which greatly facilitate the study of Parts 3 and 4. They are numerous and exceedingly good, and the trained dermatologist will find many of them useful in comparing rarities of doubtful or differing nomenclature in the two languages. Coming to Part 2, this deals with the reactions of the skin, its anatomy and physiology (profusely illustrated by diagrams), its biochemistry, the mechanism of pigment formation, the immunising functions of the skin, the possibility of an internal secretion from it, its metabolism, the physiological connexions of the endocrine glands and the vegetative nervous system, and many other

REVIEWS AND NOTICES OF BOOKS

Dorland's Medical Dictionary

The American Illustrated Medical Dictionary. Sixteenth edition. By W. A. NEWMAN DORLAND, M.D., F.A.C.S., with the collaboration of E. C. L. MILLER, M.D. London: W. B. Saunders Co., Ltd. 1932. Pp. 1493. 35*s.*; or with thumb index, 37*s.* 6*d.*

IN reviewing the fourteenth edition of this work five years ago we alluded to the tendency for a dictionary in later life to become an encyclopædia. We received the fifteenth edition but failed to review it, owing to a fruitless search for omissions of which only three ultimately came to light—namely, Higginson's syringe, prolan, and solipsism. One of these is made good in the sixteenth edition now before us which, we are told, contains several hundred new words, most of which appear for the first time in any dictionary. The encyclopædic tendency has now resulted in the inclusion of 279 portraits of men who have given their names to the terminology of medicine. These portraits, many of them borrowed from Garrison, constitute a gallery of the great physicians of the past. They are excellently reproduced, and there is no doubt that they do enhance the interest of the volume, especially for the odd moments when the reader idly turns over the pages. From the artistic point of view the portraits suffer from their proximity to pictures of monstrous fœtuses and patients suffering from unattractive diseases, but this perhaps is inevitable. If now converted to the use of text illustrations we are still sceptical of the value of such plates as that of biliary calculi (between pages 228 and 229) which fill so scantily two whole leaves of a book, otherwise a masterpiece of legible compression. In this edition the terminology of physical therapy has been brought into harmony with the suggestions of the Council on Physical Therapy of the American Medical Association, and the whole book has been through the hands of the staff of the Association under the direction of Dr. Morris Fishbein. It is now 32 years since Dorland's dictionary began to appear, and during this time the volume has continuously improved in appearance and in ease of reference.

A Text-book of Pathology

An Introduction to Medicine. By WILLIAM BOYD, M.D., M.R.C.P. Edin., F.R.C.P. Lond., Professor of Pathology, University of Manitoba; Pathologist to the Winnipeg General Hospital. London: Henry Kimpton. 1932. Pp. 946. 45*s.*

THE medical student has already the choice of many excellent text-books of pathology, and the first reaction aroused by a new production is a guess as to its fate in competition with its established rivals. We predict that Prof. Boyd's text-book will enjoy a considerable degree of popularity, for it is a pleasantly written and readable work, is well illustrated, and covers the ground quite adequately. Its motive is the study of pathology in relation to the living patient, and it is intended to serve as an introduction to medicine and surgery. Wherever possible the author strives to correlate clinical symptoms with pathological lesions, and to this end in his description of the more important diseases an account of the lesions is preceded by a brief summary of the clinical symptoms, and followed by a discussion on the relation of symptoms to lesions.

The book is essentially a student's manual for, as Prof. Boyd points out in his preface, it is no longer possible to write a text-book for the student which shall at the same time serve as a book of reference for the working pathologist. Brevity and a somewhat dogmatic attitude are prime virtues in students' text-books, and Prof. Boyd has wisely resisted the temptation to discuss theories in too great detail. But brevity and dogmatism may be carried to excess, as they are occasionally here. For example, the section on pneumoconiosis is so brief as to be misleading, and the bald statement that acute diffuse glomerulo-nephritis is an indication of bacterial infection would be improved by a little elaboration. It was a pleasure to find on page 35 a warning against a teleological view of inflammation for, as the author says, "there is nothing transcendental about the process, which is governed by purely physico-chemical laws and must not be looked upon as purposive in nature." It was the more disappointing therefore to read on page 232 that "cancer is a process unlike any other biological process. All other processes are designed to an end. Growth, reproduction, inflammation, repair, all have meaning. Cancer apparently has none." But in the main Prof. Boyd follows his own counsel and avoids teleological argument. His teaching is sound and thoroughly up to date, and excellent descriptions of recent work, for example that on the origin of the melanomata, are included.

1. Mothercraft, Antenatal and Postnatal

By R. C. JEWESBURY, D.M. Oxf., F.R.C.P. Lond., Physician in Charge of the Children's Department, St. Thomas's Hospital; Hon. Medical Director to the Mothercraft Training Society. London: J. and A. Churchill. 1932. Pp. 178. 10*s.* 6*d.*

2. The Breast-fed Baby in General Practice

By LESLIE GEORGE HOUSDEN, M.B., B.S. Lond. London: H. K. Lewis and Co., Ltd. 1932. Pp. 118. 4*s.* 6*d.*

1. FEW pædiatricians could be better qualified than Dr. Jewesbury to write on the subject of infant feeding and management. This book represents the fruit of 25 years' experience of infant welfare work and of close association with the Mothercraft Training Society since its inception. Breast feeding, it need hardly be said, is strongly and consistently advocated, and full consideration is given to its establishment and maintenance. The principles of artificial feeding on the "percentage" system, initiated by Sir Frederick Truby King, of which the author has been the principal exponent in this country, are given in detail. This method, of which the aim is to keep constant the protein ratio (the percentage of calories derived from protein to those derived from fat and carbohydrate), and of limiting the total protein given to 1·6 per cent., involves a somewhat elaborate modification of cow's milk by dilution and addition of both fat and carbohydrate. Dr. Jewesbury recommends the use of lime water also in formulas made up with raw cow's milk. Whether this complexity of ritual is entirely necessary or even practicable in dealing with normal infants of the out-patient class is open to question, and there are those who will hardly agree with the author's emphatic statement that "protein indigestion is one of the commonest difficulties met with in bottle-fed babies." There is no question, however, that percentage feeding can, and does, give very satisfactory results, and if confirmation of this were needed it would be found in

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considerations. A brief chapter on the common affections of the nail-bed and the pilosebaceous follicle are followed by a dissertation on the general principles of local treatment, rules, and the indications for hydro-, physio-, helio-, and electro-therapy. The authors have handled this chapter, as indeed they have the whole book, in a novel and stimulating way. The well-illustrated chapter on cosmetic surgery, which is perhaps more practised in Paris than elsewhere, is contributed by Pierre Brocq.

The second volume includes a description of the dermatoses—eczema and its numerous types, psoriasis, and the parakeratotic group. Then follows a chapter on the protozoal infections, including syphilis, which is very briefly discussed in comparison to other dermatological conditions. The mycological, superficial and deep, the microbial, and ultramicroscopic infections are then discussed, special attention being devoted to leprosy and tuberculosis of the skin, and finally—and this is an original feature—a 200-page illustrated "dictionary" of the dermatoses, classified in alphabetical order, and liberally annotated with diagnostic and therapeutic aids is supplied.

The industry, care, and knowledge that have been expended in the preparation, illustration, and the entirely novel arrangement of this excellent text-book deserve high commendation.

A Text-book of Clinical Neurology

Second edition, revised. By ISRAEL S. WECHSLER, M.D., Professor of Clinical Neurology, Columbia University, Philadelphia. London: W. B. Saunders Co., Ltd. 1932. Pp. 759. 35*s.*

THIS work appeared originally five years ago, during which period some notable advances have been made in knowledge of the diseases of the nervous system. These have been incorporated by Prof. Wechsler in his second edition, which in several ways represents an improvement on its predecessor. The scientific caution of the writer is well exemplified by his brief critical review of such questions as the syndromes of the corpus striatum, the ætiology of the neuroses, or the relation of the endocrines to nervous function. On the other hand, as befits a book for students and practitioners, the presentation of the accepted facts of clinical neurology is dogmatic, descriptive, and concise. The illustrations are more or less uniformly good. Brief bibliographies are appended to each section.

Technique of Ultra-violet Radiology

By D. T. HARRIS, M.B., B.S., D.Sc., F.Inst.P., Professor of Physiology, London Hospital Medical College. London: Blackie and Son. 1932. Pp. 166. 6*s.*

THIS small volume, one of Blackie's Technique Series, was designed by Dr. Harris to meet the needs of workers who wish to handle ultra-violet generators for any purpose. It fulfils a want, giving in clear concise form the laws governing radiation, absorption, generation of ultra-violet radiation by high-frequency oscillatory discharges, arc lamps, and mercury-vapour lamps. The methods used in detection and measurement of ultra-violet radiation are indicated. There is a useful chapter on spectrometry; others deal with thermal radiometers, photo-electric methods, and amplification. A short section on ultra-violet therapy contains in condensed form a wealth of useful information. The book is clearly illustrated, and contains useful diagrams and tables. It may be doubted, in spite of the suggestion printed on the loose cover, whether the book will prove of value to nurses, laboratory workers, and medical students. The subject matter precludes easy reading, and some knowledge of advanced physics is necessary if the reader is to follow Dr. Harris's account of the laws governing ultra-violet radiation.

The book will appeal, however, to the specialist, the research worker or technician, and to the bio-physicist, for the information it summarises is not easily accessible.

Surgical Pathology of the Female Generative Organs

By ARTHUR E. HERTZLER, M.D., Professor of Surgery, University of Kansas. London: J. B. Lippincott. 1932. Pp. 346. 21*s.*

THIS monograph forms one of a series on the branches of surgical pathology; thus many of the topics are dealt with from the point of view of the general surgeon rather than of the gynæcologist, who will be disappointed by the lack of detail in certain places. The views expressed, however, are shrewd and sound. The condemnation of unnecessary operation and indiscriminate oöphorectomy is welcome, particularly when expressed with such vigour. The descriptions call for little criticism. A welcome innovation is the inclusion of an account of the pathology of retained products of conception in the section dealing with non-malignant diseases of the uterus. The references are derived almost entirely from American publications, and compare unfavourably as indications of important work with those usually supplied in modern text-books. The book is beautifully produced, and the illustrations are worth careful study, and surgeons who deal with all types of abdominal surgery will find it of considerable value, though it is hardly the exhaustive treatise on gynæcological pathology which such a controversial subject seems to demand.

The Legal and Ethical Aspects of Medical Quackery

By LEONARD LE MARCHANT MINTY, Ph.D., B.Sc., LL.B. London: William Heinemann (Medical Books) Ltd. 1932. Pp. 262. 7*s.* 6*d.*

THIS is a valuable little book. It is written without exaggeration and the author's statements are supported by full reference to legal procedures and decisions, and publications in journals, lay and medical. The mere list of legal cases cited occupies some three pages, and in many cases the notes on what happened justify fully the author's statements. An introductory chapter on "Infamous Conduct in a Professional Respect" is a lucid description of a subject which is eternally puzzling to those who do not understand either the origin of the unfortunate phraseology or the dependent penal procedure. We wish that critics of the General Medical Council could read this chapter before making appearances in print. From the chapters on the herbalist, the bone-setter, and the osteopath, the reader should learn what chances these rivals to the trained medical man have of effecting anything which is beyond the powers of qualified medicine, while the risks to the public of confidence in the unqualified are set out. But there is no intolerance in the author's views, and in many places he recognises the value of the proceedings undertaken by unqualified persons, while they are working in a position ancillary to scientific medicine.

THE LANCET

LONDON: SATURDAY, NOVEMBER 12, 1932

SERUM TREATMENT OF POLIOMYELITIS

LAST March we published a report by Dr. JEAN MACNAMARA and Dr. F. G. MORGAN on the serum treatment of poliomyelitis in Melbourne. The conclusion of this report was that the disease could often be diagnosed in its pre-paralytic stage and that "the use of human immune serum at this stage, in adequate dosage, has given excellent results as evidenced by a low mortality-rate, a low average total paralysis, and a strikingly low proportion of paralysis of the severer grades." These conclusions have been challenged on the ground that the controls provided were insufficient. About the same time S. D. KRAMER, W. L. AYCOCK, and their associates,[1] in the United States, described a series of 82 cases in which roughly half received serum in the pre-paralytic stage and no reason was found to suppose that it did any good. The same conclusion was reached in a large inquiry made in New York at the suggestion of Prof. W. H. PARK, whose results have already been summarised in THE LANCET (July 23rd, p. 186). It is agreed that the only way to prove the worth of the serum would be to treat alternate cases with it. This has not been done of late years, for the usual reason that believers in the remedy cannot see their way to withhold it. Attempts to provide controls in other ways are full of difficulties. For instance, a campaign in favour of early treatment by serum —such as the campaign in Melbourne—introduces a fallacy because it leads to the recognition of cases which would otherwise not have been diagnosed. A high proportion (variously estimated) of patients with poliomyelitis do not develop paralysis, whether treated or not. Under ordinary circumstances they are apt to escape diagnosis; but if a great effort is made to secure serum treatment of every patient most of these minor cases will be brought to hospital; and the end-results, on the average, will appear to be very much better than usual. The successes of MACNAMARA and MORGAN are criticised on these lines, and the general opinion at the annual meeting of the American Medical Association last summer was that the investigations of PARK, and of KRAMER and AYCOCK, more nearly approached a controlled experiment than any others so far made. The provisional conclusion was that further work should be done, but that nothing favourable has been proved. PARK[2] points out that poliomyelitis is a virus disease and that we have no knowledge of any such disease that can be benefited by an antiserum after clinical symptoms have developed. This does not, of course, mean that serum is inactive; indeed, in the valuable reference book[3] just issued under the auspices of the International Committee for the Study of Infantile Paralysis, of which Prof. PARK is chairman, evidence is given of the value of serum for the passive immunisation of children during an epidemic. But prophylactic and curative value are not synonymous, and we have the example of measles before us in which convalescent serum is a definite preventive in the early stages of the incubation period but is impotent after illness has begun.

The facts are thus sub judice; but many workers are convinced by their observations that serum is clinically useful in the pre-paralytic stage of poliomyelitis, and there is little reason to think it can be harmful if properly given. Hence there is naturally a demand both from medical practitioners and from the public for its administration in individual cases. In this country the treatment is in use in London County Council hospitals, at Oxford, at Manchester, and elsewhere. The Ministry of Health, we understand, are watching the results with close interest and an immunisation committee has been set up at the Ministry which keeps in close touch with this work and also with research which is in progress. In practice it should be realised that, on present evidence, treatment by convalescent human serum is only to be given in the pre-paralytic stage; according to most authorities it is of no avail when paralysis has once supervened. The clinical diagnosis should if possible be confirmed by an examination of the cerebro-spinal fluid made at the bedside without delay and the procedure described by MACNAMARA and MORGAN may here be followed with advantage. Although lumbar puncture, by itself, has often been recommended as useful in poliomyelitis there is now some reason to suppose that it may actually initiate involvement of the central nervous system by drainage of spinal fluid, through permitting readier penetration of the virus through the choroid plexus (J. E. GORDON). Hence some hold it unwise to remove cerebro-spinal fluid and to delay the administration of serum while that fluid is sent away for examination—as was done in the New York investigation. For diagnostic purposes, however, 5 c.cm. of cerebro-spinal fluid suffices and the examination can be carried out quickly if the microscope and counting-chamber are ready for use before the lumbar puncture needle is inserted. By this means a second lumbar puncture may be avoided if intrathecal administration is employed.

The collection and preparation of serum requires special precautions and the supply from convalescents is necessarily limited. A recent study by MAURICE BRODIE[4] in Canada, however, confirms previous statements that serum of high antibody content may be found in urban adults who are not convalescent from the disease, and his figures suggest that serum from this source is

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[1] New Eng. Jour. of Med., 1932, ccvi., 432.

[2] Jour. Amer. Med. Assoc., Sept. 24th, p. 1050.

[3] Poliomyelitis. Williams and Wilkins Company, Baltimore, U.S.A. 1932. Pp. 562. $6.

[4] Jour. Exper. Med., Oct. 1, p. 507.

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1 Cadbury Bros. wish to inform doctors that, as a result of tests carried out for them by a high authority, it has been shown that the cacao bean contains Vitamin D. (one unit of anti-rachitic activity per gram).

2 The methods of manufacture of Cadbury's chocolates result in the retention of the Vitamin D. natural to the cacao bean.

PAIN HAS ITS
PART TO
PLAY

AND THEN

VERAMON

AN
ADEQUATE
ANALGESIC

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form of treatment for the specialist rather than for the general dental practitioner. "Prevention of periodontitis for the community, as distinct from the individual under expert care, is as yet non-existent and the outlook is frankly pessimistic." In the final paper of the series Dr. R. G. Agnew reminds us that pyorrhœa is by no means confined to civilised man. He has visited some of the primitive races living in the Himalayas whose diet is almost exclusively maize, supplemented by a few vegetables. He found that the mouths were so dirty that he had to remove mounds of corn-meal from the teeth in order to examine them. Caries was almost non-existent but, by contrast, pyorrhœa was common. In observations like this, which are now rapidly accumulating, there must surely be clues that will enable us before very long to fit the parts of the puzzle together. Despite Dr. Box's warning against optimism—and it would undoubtedly be echoed by most authorities to-day—it is hard to believe in the impossibility of devising some effective and relatively simple scheme of dental prophylaxis.

THE DOCTOR'S DAY

"Happy the people whose annals are blank in history's pages" is a saying attributed to Montesquieu; the sentiment is inverted by modern phrasing in the journalistic proverb, "Bad news is good copy." It is for this reason that there is little contemporary record of the doctor's life—how it is he lives and what it is he does. The "bad news," in other words the lurid happenings, do occur, but not with the frequency that morbid or romantic fancy suggests; and when they do occur, while they would furnish material for popular excitement, they are often exactly the events which cannot be recorded, for this or that reason, in a public manner. The seamy side of professional life, it is true, is presented unostentatiously at the board meetings of medical protection societies, and is briefly delineated in certain annual reports; while the adventures of those who have to appear before the General Medical Council in various circumstances may figure prominently in the lay press. These things have what is called "news value," and their appreciation is raised by their rarity. They are the sensational or sordid things which the more credulous seem to hold make up the doctor's day. When Dr. Jekyll is accompanied by Mr. Hyde he secures a notoriety which he and his colleagues regret, but the notoriety is out of all proportion to the significance of the occurrences, and is enhanced by their rarity. Every doctor, it is true, must be prepared for a plunge into drama, just as he must be prepared to meet a clinical emergency. On any day he may be involved in a legal suit, with issues of high "news value," or be confronted with the need to make a decision upon which life will depend. These things are sporadic not epidemic in the professional diary, and receive generous attention. But the working day escapes record to such an extent that few doctors know how their confrères along different lines of activity spend their day. To describe in detail the life of the doctor, either generally or along its various professional objectives, has been hardly attempted; the sympathetic studies of Scott, Trollope, and George Eliot are not forgotten, but serve to show how difficult it is to tell the story from without. On another page appears the first of a series of articles entitled "The Doctor's Day," contributed upon invitation by practitioners in various walks of medicine—an attempt to write the story from within. The articles are written, it will soon be seen, on no uniform plan, the authors recording their personal experiences, and preserving anonymity. For the information of those who like a tale to have a cheerful message we may disclose the fact that, speaking generally, the contributors to the series have found themselves happy in their lot.

UNEMPLOYMENT AND HEALTH

This week has seen a parliamentary debate on unemployment and the issue of a final report by the Unemployment Insurance Commission. The political issues are once more before the Government and the country. But as year follows year many people are becoming convinced that no political solution will be adequate—that the future of industrial society depends less on schemes of payment than on the adjustment of minds. A social revolution is in rapid progress; the time has gone when anyone can justifiably feel that men who are out of work have only themselves to blame, and the time has come when everyone must reconsider his responsibility towards them. On these matters of ethics the medical profession may be supposed to have nothing to say—a view which, we are glad to think, is not universally held; but where physical and mental health is in question medicine is deeply concerned. The special contribution should here be the supply of accurate information. It is being stated, for example, by untrained observers that malnutrition is becoming widespread in town and country, and it is important that the public, as well as the Government, should have the evidence of trained observers by which to judge this opinion. Is this evidence as readily available as it should be? In the Commission's report it is stated as a fresh principle of the Bill of 1924 "that an honest man shall not starve though he be unemployed," and the Blanesburgh Committee said that ideal benefits should be sufficient to prevent the insured man from being haunted by the fear of what must happen to him if he is unemployed. The present scheme was not intended (p. 190) to provide complete subsistence, and the Minority Report of the Commission quotes (p. 377) the feeling of responsible people that "benefit is now failing to maintain families adequately even at a bare maintenance level." Is this true?

The new home of the British College of Obstetricians and Gynæcologists, 58, Queen Anne-street, London, W., will be formally opened by H.R.H. the Duchess of York on Monday, Dec. 5th, at 3 P.M., and in the evening of the same day a dinner of the College will be held at Grosvenor House, Park-lane. The President of the College, Prof. Blair Bell, will preside at the opening ceremony and the dinner. Fellows and Members who wish to be present at either should apply for tickets at once to the Hon. Sec., 58, Queen Anne-street, London, W.

equally effective; certainly it is very much more easily obtainable and therefore should be cheaper. As regards technique, it is thought that the best clinical results are obtained by intrathecal and intravenous administration. The dosage is regulated by the age of the patient, but it is desirable to give as large a dose as possible; an average dose is 20 c.cm. of convalescent serum intrathecally with 30 c.cm. intravenously (R. W. Fairbrother). If no sign of improvement is observed the dose should be repeated every 24 hours until improvement occurs. Macnamara and Morgan give an average dose of about 60 c.cm. intrathecally at first. The serum should be warmed to 37° C. and it should be given slowly and by the gravity method after withdrawal of a larger amount of cerebro-spinal fluid. A second intravenous dose or even a third may be necessary if the response to the first is not immediate.

The international committee's new book on poliomyelitis shows how tremendous is the mass of information about this disease already collected. The problems of its epidemiology, prophylaxis, and specific remedies are bewildering, and it is a relief to turn to branches of practice whose principles are clearly laid down. It is hard to speak too strongly of the importance of caring for paralysed limbs from the very outset of the illness, and the ways in which this may be done are set out in our present issue by Mr. Alan Todd.

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PREVENTIVE DENTISTRY

This year, for the first time, the British Dental Association held its annual meeting outside Great Britain, and the proceedings of the Toronto Congress, fully reported in the October issue of the *British Dental Journal*, are likely to be long remembered with satisfaction. The symposium on preventive dentistry is, perhaps, of special interest, both in revealing the present state of our knowledge and in indicating the trend of thought in this country and in America. The first paper on preventive orthodontics, by Dr. Martin Dewey, of New York, shows how this branch is growing, and while still concerned with the treatment of irregularities of the teeth, is actively engaged in the more important task of trying to prevent them. The implications of preventive orthodontics go far beyond æsthetics, for it is recognised that irregularities of the teeth predispose to dental caries and pyorrhœa. Dewey divides the causes of malocclusion into three groups—inherited, congenital, and acquired. Some of the congenital factors can be controlled. The most important is malnutrition, and here he lays great stress on nourishment of the mother during pregnancy. Preventive orthodontics begins before the birth of the child, and the real task of the orthodontist in this connexion is, he thinks, to educate the medical profession. Malocclusion, he holds, is a disease of civilisation, because civilisation has produced food fashions which make mastication unpopular and unnecessary. This lessening of the function of the jaws is reflected in impairment of growth, and even if a vigorous habit of mastication be adopted in later life, this cannot compensate for the invaluable stimulus of use while the permanent teeth are developing and the growth of the jaws is most active. Another factor of much importance in the prevention of malocclusion is normal nasal breathing. Mouth-breathing, he believes, is becoming much commoner and brings about a series of harmful results in gums, jaws, and teeth. Finally, the early treatment of malocclusion—while the deciduous dentition is alone affected—falls properly into the category of preventive orthodontics, since at this time the treatment is relatively simple and will prevent deformity of the permanent teeth. All malocclusions are progressive and none of them is self-corrective.

The second paper, on the prevention of dental caries, was by Mr. A. E. Rowlett, who represented England in the symposium; it is a thoughtful presentation of a subject singularly complex. There are three main ways in which caries might be preventable: (1) by the resistance of the teeth themselves, which is another way of saying that the structure of the teeth is the all-important factor; (2) by the action of the saliva combined with a diet rich in detergent elements, and, conversely, poor in the sticky, fermentable carbohydrates; and (3) possibly by lessening the activity of the acid-forming bacteria of the mouth. Rowlett points out that the protagonists of these three schools of thought can all claim a good deal of experimental and clinical evidence in support of their views. But so far, he thinks, it is impossible to say decisively that any one method can be relied upon to prevent caries. Of particular interest is his account of peoples living under primitive conditions and possessing a natural immunity to dental decay. But, he remarks, while the solution of the problem may lie in the absence of caries in the inhabitants of Tristan da Cunha, the multiplicity of factors involved makes it impossible to assess their individual value. "It does not help us that theorist after theorist may declare that the perfect teeth of the islanders is proof of his own particular contention." At present, he believes, all methods which appear to offer means of preventing caries must be adopted, but as yet there is no certain and easy method of avoiding it.

Writing on the prevention of periodontitis (pyorrhœa), Dr. Harold Box, of Toronto, whose researches on this disease have done so much to elucidate its pathology, is less hopeful in tone. He reviews the present state of our knowledge, and concludes that the most important ætiological factor is an abnormal occlusion of the teeth which leads to a state of strain on the supporting tissues. This faulty occlusion, according to Box, is of relatively modern onset, and is correlated with changes in dietetic habits and an alteration from an edge-to-edge occlusion to an overlapping one. The prevention of periodontitis, according to this view, lies chiefly in the restoration of a balanced occlusion. Something can be done by the dentist to bring this about, but it is, in Box's opinion, a method also the diaphragm is raised by pressure of the abdominal viscera, in this case effected by direct pressure applied to the small of the back.) Dr. Eve reports the trial of his method on the normal subject, and in one case of post-diphtheritic paralysis and one of Landry's paralysis. It will be of interest to see if his expectations are justified by further clinical investigation of the method, which has the great advantage that a minimum of apparatus is required, and this can be rapidly extemporised. The possible regurgitation and inhalation of stomach contents is a danger which might in practice prove insurmountable. Another method in which the diaphragm is raised and lowered by alteration in the pressure of the abdominal contents has been described by Dr. Rudolf Eisenmenger in a recent lecture to the Society of Physicians in Vienna.[1] The apparatus, which he graphically describes as "The Biomotor," consists of a flexible shield across the concave surface of which is stretched a rubber diaphragm; the convex surface is connected with two electric motors by means of which air can be driven into, or sucked out of, the shield. The rubber diaphragm is closely applied to the upper abdomen and lower part of the anterior chest wall of the patient, so that the abdominal wall is alternately sucked outward and compressed. In this way, the patient's diaphragm is rhythmically lowered and raised. The speed and depth of respiration can be varied at will, and the author claims that the apparatus, in addition to providing artificial respiration, serves to aid the circulation of blood which is driven from the liver and splanchnic region towards the heart.

UNIVERSITY OF DURHAM: NEWCASTLE COLLEGE OF MEDICINE

THE publication of certain facts in connexion with an inquiry into the administration of the Newcastle College of Medicine has revealed two things: first, that any detailed comment on the situation would be certainly inexpedient and possibly unfair, while all that has happened is sub judice; and secondly, that there can be no reason why the inquiry should be delayed in face of the resolution of the Court of Governors of the College in its favour. There is superabundant evidence of the need for the inquiry, and it is evident that the College may suffer by the prolongation of the existing situation. The medical profession has a strong interest in a right settlement of the important points at issue; the general constitution of the College of Medicine indicates this. The governors—elected, contributory and representative—number 128, mainly non-medical and non-university members, while the executive council consists of 28 members, of whom 11 are medical; 9, including persons who may be medical, are representatives of the Court of Governors, the rest represent Armstrong College and other sections of the University. The controlling body of the College has had within it a powerful medical section, and to the medical profession at large the reasons should be made clear how and why the present state of affairs has come about. This does not mean that virtue lies in the publishing of disputes where personalities are freely employed; but it does mean that the medical public should know what has caused a serious cleavage of opinion among those responsible for the medical school of a university. Lord Londonderry, as Chancellor of the University of Durham, with the pertinent evidence before him, has said that an independent inquiry should be instituted into the administration and constitution of the college of medicine of the University; the governors of the College, by a large majority, have found the Chancellor right. There seems no reason for delay in the consequent procedure.

GALL-STONES

THE recent international congress at Vichy[1] discussed the major problems of biliary calculus and its sequels. The tone of many of the papers read revealed a new spirit of caution, contrasting with the extremely active attitude towards gall-stones predominant a few years ago. Precision in diagnosis rendered possible by the introduction of cholecystography has contributed to this change. Time was, as R. Gilbert (Geneva) pointed out, when the surgeon had his knife into the gall-bladder which filled adequately but emptied with "pathological" slowness. Failure to fill or inadequate (mottled) filling are now demanded as the real evidences of disease. Dr. Gilbert claims that even in cases with chronic jaundice cholecystography may give the required clue. On the biochemical side, N. Fiessinger (Paris) and J. Dieryck (Louvain) had to admit that the laboratories are not yet able to give much assistance. Deeply interesting and technically adroit though their work has been during the last decade, chemists are still unable to assess the extent of damage to the liver in jaundiced cases, or, when jaundice is not present, to offer much help in diagnosis or treatment. Dieryck summarises his conclusions thus:

> (1) Investigation of biliary function does not give precise information on the importance of the lesions of the hepatic parenchyma and does not allow a clinical prognosis to be made.
>
> (2) Investigation of the nitrogenous function necessitates a delicate technique and leaves a good number of cases of "slight hepatitis" undetected.
>
> (3) Investigation of the excretory function of the liver is not indicated in this affection.
>
> (4) At the moment one cannot judge the state of the liver either by the study of the antitoxic function or by the metabolic disturbances of the lipoids.
>
> (5) Investigation of the glycogenic function by production of galactosuria and the study of the total and partial concentrations of galactose eliminated, allows the state of the liver to be revealed and its gravity to be appreciated. Besides this, it distinguishes a mechanical jaundice (obstruction of the bile-ducts) from a hepatic jaundice (due to cellular disease).

Turning to pathogenesis, no one can yet assert with conviction that the origin of biliary calculus is exactly understood, but it is worthy of note that throughout this congress there was little if any dissent from the present-day doctrine that (1) disease of the walls of the gall-bladder is an invariable accompaniment of cholelithiasis, and that (2) many examples of the disease are complicated by a serious degree of hepatitis, which may not only increase the hazards of operation but will itself require treatment even when the gall-bladder and its contents have been removed. So many speakers emphasised this latter point that it is only fair to point out that the predominance of hepatic complications is the natural result of an ultra-conservative attitude towards surgical treatment. While the surgery of the biliary tract must never be lightly attempted, when expert help is available it becomes a grievous mistake to permit repeated attacks of colic or jaundice before the surgeon is called in. It would not be right to state the matter so strongly without adding that it is just the attack of colic or of jaundice that justifies surgical intervention. J. V. Donnet (New York) uttered a

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[1] Wien. klin. Wochenschr., 1932, xlv., 1105.

[1] See THE LANCET, Oct. 29th, p. 976.

ANNOTATIONS

PYELITIS IN PREGNANCY

The dilatation of the upper urinary tract which is associated with pyelitis of pregnancy has long been known, and several explanations of its cause have been suggested. Opitz attributed the dilatation to compression of the ureter between the uterus and structures at the pelvic brim. Stoeckel drew attention to the atony of the ureter which sometimes produced dilatation throughout its entire length. Hofbauer believed that muscular hypertrophy of the lower end of the ureter and its sheath caused obstruction. Dr. Dugald Baird, in the Bradshaw lecture which we published last week, lays stress on atony as the primary factor. Dilatation of the ureters begins, he says, in very early pregnancy before the uterus is large enough to cause compression at the pelvic brim. Obstruction is a secondary factor and is first seen at the fourth or fifth month; it is usually most marked on the right side, the site of compression being the pelvic brim. The muscular hypertrophy noticed by Hofbauer is very slight at this stage of pregnancy and is more probably a protective reaction, developed only in the later months.

The cause of the atony, Dr. Baird suggests, is probably an endocrine disturbance, possibly deficiency in the posterior pituitary secretion. Ovarian cysts also cause dilatation of the ureters and renal pelvis, but this dilatation is never so great as that which occurs in pregnancy and the ureter is not dilated below the pelvic brim. Anselmino, Hoffman, and Kennedy have shown that there is an over-production of the posterior pituitary hormone in patients with toxæmia, and these patients never show atony of the urinary tract, and do not develop pyelitis. The atony and stasis are associated with a delay in excretion which can be demonstrated by renal function tests. Baird found dilatation present in 62 per cent. of primigravidæ and 42 per cent. of multiparæ in a series of 100 normal patients examined at monthly intervals. Previous estimates give widely differing figures, both above and below this. In a series of 96 patients who had sterile urine when first seen, 14·5 per cent. showed pus and organisms later in pregnancy. This may be compared with the results of an investigation of 406 unselected patients by Gladys H. Dodds.[1] She found that 11·2 per cent. developed bacilluria during pregnancy, but in only 7·6 per cent. was the organism *Bacillus coli*. Infection of the urinary tract is therefore a common complication of pregnancy. It sometimes gives rise to symptoms which may be diagnosed as due to albuminuric toxæmia; it is sometimes associated with hyperemesis, and occasionally with uterine hæmorrhage. Microscopical examination of the urine should always be done as a routine measure in the diagnosis of any toxæmia of pregnancy, for the typical symptoms of pyelitis are often absent. The source of the infection is not discussed in Dr. Baird's lecture. The condition is usually considered to be a descending infection, due to the excretion by the kidney of bacilli circulating in the blood. The bacilli probably come from the colon and would not be able to infect a normal urinary tract. Constipation, which is commonly present in cases of pyelitis, is probably the cause of the absorption of an abnormal number of bacilli. A paper by H. F. Helmholz[2] on spontaneous pyelitis in the rabbit suggests an ascending infection for this type of pyelitis. The rarity of post-mortem examinations in pyelitis of pregnancy makes it difficult to come to a final conclusion.

The routine treatment of pyelitis by alkalis, followed by acid sodium phosphate and hexamine when the temperature has been normal for a week, is only partly successful; but postural treatment, designed to relieve pressure at the pelvic brim, is remarkably effective in some patients who are resistant to treatment with alkalis alone. Dr. Baird suggests a complete urological examination including catheterisation of the ureter. Ureteric catheters may be left in, and the drainage of the renal pelvis which follows will often determine the subsidence of acute symptoms. The problem of cure is more difficult. Treatment of pyelitis by a ketogenic diet after the acute stage is over has given better results than the older treatment by acid sodium phosphate. If the urine can be maintained at a pH of 4·6 to 5·0, growth of the colon bacillus is inhibited and the urine becomes sterile. This method, which is still in the experimental stage, may become the routine treatment of the future.

PROLONGED ARTIFICIAL RESPIRATION

The recent occurrence in this country of a number of cases of anterior poliomyelitis giving rise to respiratory paralysis has emphasised the importance of having available methods of artificial respiration which can be carried out over periods of many hours or days. Although the course of the bulbar type of paralysis (a form of the disease which is fortunately rare) is unlikely to be permanently benefited by artificial respiration, there are cases in which the diaphragm or intercostal muscles are affected where the procedure may be a life-saving one if respiration can be maintained until some recovery of the paralysed muscles has taken place. In all types of case the patient's distress is likely to be very greatly relieved. Manual methods (of which the Schafer is far the most satisfactory) have the great advantage of being immediately available and readily applied. They are usually without danger, though damage has been done by a heavy operator applying pressure to a patient with broken ribs, and a number of deaths from ruptured liver have occurred from the use of Howard's method. Even a team of trained operators, however, can hardly apply these methods for more than a limited number of hours, and for intractable cases mechanical methods become desirable. The older methods of pumping and sucking air directly into or out of the lungs have been generally abandoned owing to the large number of deaths which occurred from rupture of the lungs or stomach. Nowadays the lungs are made to fill and deflate rhythmically, by applying negative or positive pressure to the outside of the abdomen or thorax. The use of the Drinker respirator in poliomyelitis, carbon monoxide poisoning, and asphyxia neonatorum has been described and discussed on several occasions in our columns, most recently a fortnight ago; and since then reports of its use at the Wingfield Orthopædic Hospital, Oxford, confirm again the fact that it offers a most efficient method of applying artificial respiration over long periods. In our last issue Dr. F. C. Eve described a method of using gravity for actuating a flaccid diaphragm. The patient is laid prone on a trestle which is seesawed about its mid-point; the weight of the abdominal viscera serves to raise and lower the diaphragm with resulting filling and emptying of the lungs. (It may be pointed out that in the Schafer heeded. Whatever the operation and however small the risk may appear, constant care is essential. There is a species of legal action to which he did not refer, which is threatened in a blackmailing attempt to evade the payment of fees. Threats of this kind seem to be on the increase.

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[1] Jour. Obst. and Gyn. Brit. Emp., 1932, xxxviii. 773.

[2] Surg., Gyn., and Obst., October, 1932, p. 449.

MODERN AIDS TO ANÆSTHESIA

OPENING the first meeting of the session, the new President of the Section of Anæsthetics of the Royal Society of Medicine, Dr. Charles Hadfield, passed in review the modern aids to anæsthesia. Paraldehyde, avertin, the barbiturates, and carbon dioxide naturally formed the basis for most of his comments, which were catholic and judicious. He did not touch on local analgesics or on methods of administration. The present aids at our disposal, in the form of what are called basal narcotics, excellent as they are, still leave room for improvement. Dr. Hadfield pointed out, giving illustrative cases, that some of them are not free from danger, and others are not entirely dependable in their action. Dr. Hadfield regarded avertin as probably the most popular of these drugs at present, and expressed surprise that paraldehyde, the first of them to be employed and still perhaps the safest, is not more widely used. He alluded to cases of intestinal atony occurring after avertin and after other basal narcotics in which he believed these drugs could not be entirely exonerated, and called attention to the risks of a multiplication of preliminary drugs administered to any patient.

Several speakers testified to the good results they had obtained by following nembutal with chloroform, but one mentioned a case in which this combination of drugs, although given only in small doses, had resulted in a sleep which lasted for three days. Dr. Hadfield raised the question of the true nature of narcosis from nitrous oxide, relating interesting examples of the recurrence of mental impressions made during the unconsciousness due to this agent.

ALUM-TOXOID AS AN IMMUNISING REAGENT

AMONG the more important recent developments in active immunisation against diphtheria has been the introduction of toxoid treated with alum. So far the use of this material has passed little beyond the stage of animal experiment, but the valuable report of Dr. J. C. Saunders on p. 1047 brings the possibility of its routine use in human immunisation a step forward. A. T. Glenny's claim that alum-toxoid (A.M.T.) is an immunising agent of exceptional potency has been abundantly confirmed by almost all subsequent workers. It is fairly clear that the secret of its efficiency lies in the fact that the alum-toxoid complex is removed very slowly from the site of its introduction, and the animal is thus submitted for a long time to a continuous antigenic stimulus. A similar explanation serves to explain the superior antigenic properties of other preparations that are poorly absorbed, such as toxoid-antitoxin floccules and the toxoid-tapioca mixtures of Ramon. A certain amount of human immunisation has already been carried out with alum-toxoid by the workers of the Wellcome Research Laboratories, by Park and Schroder in New York, and by Wells, Graham, and Havens in Alabama, and the results of these trials are in agreement with Dr. Saunders's opinion about the high antigenic efficiency of the new preparation in human immunisation. But not all those who have taken part in the trial of the reagent have been equally satisfied with the reactions which follow its injection. There seems to be a distinct tendency for the material to produce rather obstinate indurations, and occasionally even cold abscesses, and these effects, if not very alarming, put it, in its present form, at a disadvantage as compared with some of the older and better tried prophylactic reagents. Dr. Saunders gives no details of the actual reactions he met with, but he clearly implies that the reactions were not very serious, and that they gave him little administrative difficulty. This apparent discrepancy between his observations and those of others may perhaps be due to the fact that he practises in the Irish Free State where smallpox vaccination is really compulsory, and where the population is possibly more hardened to the minor inconveniences of immunising procedures. In this country it has been a steadfast principle of the laboratory workers responsible for making diphtheria prophylactics that immunising power, always allowing that it is adequate for practical ends, must take second place to considerations of public safety and even of public comfort. Thus the anomalous situation has arisen more than once in recent years, of foreign immunologists adopting extensively the use of a new prophylactic devised in an English serum laboratory, while it is still being tried with the greatest circumspection in its country of origin. We cannot but praise our serum laboratories for their forbearance in refusing to pluck the fruit of their own growing, which lies so temptingly to their hand. It is just this forbearance which has made England a safe country to be immunised in. "Insoluble" antigens such as alum-toxoid represent an important step forward in immunising science, but the time is probably not yet ripe when such material should be released for routine use.

INFANT LIFE PROTECTION

AN important object of the Children Act, 1908, was to put a stop to the evils of baby-farming, and to a large extent it has been successful. Part V. of the Children and Young Persons Act, 1932, and the second and fourth schedules to the Act, which will come into operation on Jan. 1st, 1933, are designed still further to tighten up the regulations governing infant life protection. The Minister of Health has addressed to the London County Council and to maternity and child welfare authorities outside London a circular and a memorandum [1] setting out the powers and duties included in this part of the Act, together with a suggested form of advertisement for use by councils, and a leaflet of advice to foster-parents. A second memorandum, containing a summary of the statutory provisions, is intended for the use of infant protection visitors. Substantial alterations of the existing law have been made :—

> The age under which reception of children for reward must be notified has been raised from 7 to 9 years. Instead of notifying the reception of a child within 48 hours, the foster parent must now notify it, with full particulars—
>
> (*a*) In the case of a first child not less than seven days before reception.
>
> (*b*) In the case of any other child not less than 48 hours before reception.
>
> (*c*) In the case of a child already received without reward, within 48 hours after the undertaking to receive for reward.
>
> Change of residence must also be notified to the authority at least seven days before removal, or, in case of emergency, within 48 hours after, and the death of a child, or its removal from the care of a foster-parent must be reported both to the authority and to the person from whom the child was received within 24 hours.

The Minister's statement that reports received by him suggest a lack of knowledge of the regulations serious warning to those who would too lightly remove the gall-bladder; experimental removal of the gall-bladder, he said, is always followed by dilatation of the biliary channels, with progressive fibrosis and degeneration of their walls. H. Béclère (Paris) gave a vivid picture of the effect of cholecystectomy on neighbouring organs:

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[1] Circular 1291. Memo. 165/M.C.W. 2*d*. Memo. 165A M.C.W. 1*d*. November, 1932. H.M. Stationery Office.

> In many cases, he said, distress continues after cholecystectomy and new disturbances may appear. Radiological examination may reveal the character of fistulous tracts, and sometimes calculi or a bit of drainage-tube remaining in the lower portion of the common duct. Radiography, preceded by radioscopy, may show lesions of perivisceritis, so frequently following ablation of the gall-bladder. The duodenal bulb is always deformed after cholecystectomy. In the presence of identical deformities, distress occurs in some cases, while in others it may be absent. Perivisceritis may not be limited to simple deformity of the bulb; apical difficulty, imprisonment of air-bubbles, and version or torsion of the bulb may exist. Difficulty in the upper bend (*superior genu*) occurs fairly frequently and secondary folding or bending of the bulb may be produced. The deformity of the bulb rather commonly has the so-called "bucket" aspect, which shows the presence of embarrassment, sometimes accompanied by rather severe pain. Stenosis when more highly developed may require supplementary operation; section of adhesions or gastro-enterostomy. Adhesions may also occur at the second portion of the duodenum, presenting certain characteristic deformities in the radiogram. The right colon may be surrounded by or embedded in the mass of adhesions present. When the abdomen is suddenly hollowed by an abrupt movement, the organs lying about the duodenal centre are displaced in a single mass. These various lesions compose the painful consequences of cholecystectomy.

If, then, there are good reasons for surgical intervention in many cases of gall-bladder disease, there are equally good reasons for the exercise of the highest skill in the selection of appropriate cases. While it may be true enough that the patient who has been operated on for biliary colic will remain the surgeon's friend, the patient who is operated on between attacks of jaundice has really stronger reasons for gratitude; but the surgeon who operates on patients in whom gall-stones have provided nothing more alarming than dyspepsia is creating for himself just so many potential critics.

THE RISKS OF SPECIALIST PRACTICE

Mr. Musgrave Woodman's presidential address on the Throat Surgeon and the Law, delivered on Nov. 4th before the Laryngological Section of the Royal Society of Medicine, was not confined to the discussion of problems affecting only the specialist but covered most of the legal risks to which the whole profession are subject. He gave first a summary of the legal position in which the surgeon specialist is placed, pointing out that the performance of a specified operation is in law a matter of contract. The patient, if conscious, must consent before any operation, whether great or small, is carried out. If, as the operation proceeds, some more extensive surgery is required, the surgeon will not be held liable for exceeding the limits of consent in order to save life; but the burden of proof lies on the surgeon. It is prudent to have a responsible relative within call to give consent when required. Patients should be warned beforehand if the likelihood of any important extension is foreseen. Performance of the wrong operation is not a negligible risk; a safeguard for preventing such a mistake is to read the notes of the case or a special operation card immediately before the operation. Another possible source of legal action is the use of methods which go beyond the accepted practice of the day; here the eighteenth-century case of Baker, senior surgeon to St. Bartholomew's Hospital, remains as a warning. Analysing the degrees of negligence, civil and criminal, the duty of skill (varying with the status of the practitioner) and the duty of care, Mr. Woodman dealt also with responsibility for the acts and omissions of assistants, presumably introduced by the surgeon himself, and of nurses and attendants, as illustrated by hot-water bottle cases. The obligation of secrecy received due attention; special mention was made of the difficulty where an employer sends a workman to the surgeon and, having paid the consultation fee, expects to be told all about the man's condition. Mr. Woodman suggests the examination of such patients in the presence of the employer where possible, otherwise to refer the employer to the patient for information. Turning from the purely legal to the practical hazards, Mr. Woodman touched on such diverse incidents as prosecutions under the Road Traffic Act (the smell of ether, he remarks, may readily be mistaken for alcohol by a constable), the careless use of radium, and the accidental dislodgement of a tooth while a gag is being applied to the mouth. He cautions the surgeon to expect less mercy over a tooth dropped into the lung than the dentist will receive whose duty it is to remove the tooth intentionally. A peril of rhinological practice is to leave ribbon gauze packing in the flaps of the nasal septum, in the antrum, or high up in the nose. Careful search should always be made to see that no foreign bodies have been left behind. A swab in the mouth or pharynx should have a silk thread leading out of the mouth; gauze in the nose should have an end hanging out over the lip. The septum operation has two pitfalls. One is depression at the junction of the cartilaginous and bony portion of the bridge; if this occurs, it is a profound mistake to belittle the result to the patient. To prevent a possibly heavy claim for damages Mr. Woodman's counsel is that a female patient in particular should be told that, if she is dissatisfied with the shape of her nose, it shall be made into any shape she wishes by the grafting of cartilage without further fee. Perforation of the septum (the other great danger) must also be taken seriously; otherwise, if the patient drifts into the hands of another practitioner who quite innocently draws attention to it, a legal action may follow. Then there is the possible mischance of damage to the facial nerve in mastoid operations; if it is more than a simple operation, it is well worth while to warn the patient in advance of this serious contingency. Lastly, Mr. Woodman mentions the anxieties associated with diathermy and anæsthesia, and the question of explosions. In diathermy, he said, the surgeon is well advised to employ a skilled electrician to relieve himself of responsibility for serious variations in the intensity of the current; burns, which result if the electrode touches some part not under treatment, may be actionable injuries. The respective responsibilities of surgeon and anæsthetist have never been clearly established. The surgeon chooses the anæsthetist and is answerable for his skill and care but not for his actions in administering the anæsthetic; but the general supremacy of the surgeon in the operating theatre attracts to him a corresponding liability. As for explosions, Mr. Woodman believes most of them to be attributable to badly constructed electric bulbs introduced into the mouth or bronchus. Ether vapour, relatively non-inflammable in concentration, is highly explosive when well diluted with air; oxygen converts a simple explosion into a detonation; in the most serious cases the flame appears to flash up the anæsthetic tube and the apparatus is blown up, with resultant injuries to patient and surgeon so grave that no amount of precaution can be deemed excessive. Mr. Woodman's warning should be well

SPECIAL ARTICLES

MEDICINE AND THE LAW

Alleged Exploitation of Patients

IN London and elsewhere where local Acts have so provided, a licence is required before an "establishment for massage or special treatment" can be carried on. Acting under its statutory powers the Public Control Committee of the L.C.C. on Oct. 28th refused to grant Edward William Barton-Wright a licence for an establishment at 6, Campden House-terrace, W.8. The applicant has for some years carried on an establishment at this address under licence, but objection was now taken on the ground that he had extracted large sums of money from his patients, the greater part of which he had apparently made no attempt to repay. It was stated that he had been three times adjudicated a bankrupt—in 1893, 1910, and 1932, with liabilities totalling approximately £8000 in all, and assets nil—and had not yet applied for his discharge. The chief officer of the Public Control Department based his objection to the applicant upon the following three cases. In 1924 a patient named Evans had been persuaded to lend £3500 on the security of a debenture in a company; this debt had not been settled. In 1929 another patient was approached with a view to his guaranteeing a sum of £400 towards the cost of leasing a shipbuilding yard at Warren Point in Ireland. The patient lent £400 on the assurance that it would be returned within eight days. It was not returned; solicitors were instructed, and Mr. Barton-Wright was stated to have disappeared from his lodgings. Judgment was obtained, but the sheriff's officer discovered that there were no personal effects. The patient said that only £61 had been repaid; he understood that Mr. Barton-Wright had seven or eight patients at 25 guineas a week. A third patient, a lady living at Holland Park, said she was persuaded to lend £1200 in 1929 in return for a debenture in a company; this was to be repaid within a year or two years. It was suggested to her that she should become secretary to a company called Nature Treatments, Ltd. She had been repaid only two instalments of £100 each, and it was on her petition that the applicant was recently adjudicated bankrupt again. Mr. Barton-Wright, in support of his application, said he had repaid the lady £375, including interest. He attributed his first bankruptcy to a conspiracy. He had always intended to pay back the various sums he had borrowed, but his creditors were cutting their own throats by attempting to prevent his obtaining a licence to carry on his establishment. He claimed to be a specialist in arthritis. His present troubles were due to an illness caused by his experimenting upon himself with a new cure for arthritis.

The grounds on which the L.C.C. can refuse a licence, stated in its General Powers Act of 1920, do not differ from similar provisions elsewhere—for instance, in the Surrey County Council Act of last year. A licence may be refused if the applicant is under age or "unsuitable to hold such a licence"—a phrase conveying wide discretionary powers. It may also be refused where the premises are unsuitable or the provision for treatment is inadequate or where the establishment has been or is improperly conducted, or where the massage or other curative treatment is administered by someone who "does not possess such technical qualifications as may be reasonably necessary." The Act does not apply to public hospitals and similar institutions or to establishments carried on by registered medical practitioners, subject to certain conditions. An applicant aggrieved by refusal may appeal to a metropolitan police magistrate and thence to quarter sessions. The 1920 General Powers Act superseded similar provisions in a General Powers Act of 1915 on the ground that the previous law had been found "insufficient for the prevention of immorality." There was, of course, no suggestion either of immorality or of technical incompetence against Mr. Barton-Wright in the recent proceedings. The gravamen of the allegations against him was that he exploited elderly and infirm patients by persuading them to part with their money. It is not difficult to imagine the view which would be taken if similar allegations were established against a registered medical practitioner in his relations with his patients.

What is "Sickness"?

The Court of Appeal has affirmed the Divisional Court in holding that the word "sickness" in a wages agreement includes any circumstances which prevent a workman from carrying out his work and thus includes incapacity due to accident. A grocer's assistant was employed under an agreement containing a clause giving three weeks' wages during "periods of sickness." He injured his thumb and claimed under the agreement; his employers admitted liability under the Workmen's Compensation Act, but denied that the word "sickness" in the agreement included accident. The county court judge said that, if the agreement had been meant to cover incapacity due to injury from accident, it was inconceivable that it would not have said so expressly. The Divisional Court interpreted sickness as any morbid condition, irrespective of its cause. The Court of Appeal said sickness was in plain language an ailment which prevented one from being in perfect health. Sickness benefit in State insurance covers benefit paid for disablement as well as for disease. When, observed Lord Justice Scrutton, the marriage service prescribes the obligation to cherish "in sickness and in health," no one contemplates an added reservation "but not in the case of accident."

A Priest's Refusal to Answer

Recent discussions on medical secrecy add interest to a case before the Nottingham magistrates (reported in the *Justice of the Peace*) about a month ago, where a Roman Catholic priest declined to answer a question which was possibly most material for the purpose of the proceedings then before the bench. A girl had taken out an affiliation summons against the putative father of her child. The priest was asked questions concerning a conversation he had had with the parties in his church vestry. It is easy to understand that the answer to such questions, presumably involving solid evidence as to admission or denial of paternity, might well have been conclusive in a disputed case. The witness declined to answer. He said he considered it his duty to maintain the sacred trust reposed in him even at the risk of a possible miscarriage of justice. The bench expressed the opinion that the refusal amounted to contempt of the court but it wisely took no action. The case was disposed of by an order made on the strength of other evidence available. Legally there are technicalities depending on the nature of the court concerned. Some courts are "courts of record"; others are not. If a contempt is committed in the face of a court of governing infant life protection among authorities and their staffs seems to imply that evasion can and does occur. Sir George Newman pointed out in his last annual report that "the responsibilities of infant life protection are not confined to dealing with cases actually notified, but include the admittedly difficult task of ascertaining, and of having notified those cases which so far have evaded the law." Authorities are advised to issue advertisements warning foster-parents that children must not be taken for reward without previous notification, and inviting them to apply to the council for further particulars. Section 68 makes it an offence to publish any advertisement of persons or societies willing to receive children under 9 unless the advertiser gives name and address. In London a full-time officer is employed entirely in scrutinising such advertisements.

Except in London infant protection visiting is now usually carried out by health visitors, and under the new Act the supervisory duties have been extended to include the general health and well-being of the children. One task of the infant protection visitor is to recommend suitable homes for registration. The demand for good foster-mothers is far greater than the supply, and the temptation must be strong to accept homes which fall below the desired standard. Great caution, however, should be exercised both in recommending homes and in granting exemption from inspection; there is always a danger of the development of homes of an unsatisfactory nature under cover of the phrase "convalescent home" or "boarding school," unless care is taken to limit the number of children that may be received in any dwelling. New power is given to impose conditions to be complied with where the total children kept in the dwelling exceed a certain number. Another means of evasion is to assert that a child has been adopted, and here again every case should be investigated and the legal adoption verified. No doubt the law that is knave-proof has yet to be enacted; recently a scoutmaster and Sunday school teacher was fined for proved cruelty to a child which he had received without reward. But these changes and others under the new Act are designed for the safeguarding of a peculiarly helpless group of children. It is clearly desirable that the officers concerned with its administration should familiarise themselves with the whole law of infant life protection without delay.

EARLY IMPRESSIONS OF CHLOROFORM CAPSULES

A SYMPOSIUM of opinion on the relief of pain in normal labour, contributed to the October and November issues of *Maternity and Child Welfare*, contains some early impressions of the value of the 20 ♏ chloroform capsules which are now being distributed for trial to hospitals and medical men.[1] Miss E. M. Pye, president of the Midwives Institute, finds that even this very small quantity of chloroform makes the mother less sensitive to pain, prevents her from inhibiting voluntary efforts, and enables her to sleep between pains. Dr. J. S. Fairbairn believes it to be incumbent on the medical profession to work out some means of giving analgesia that can be used by the midwife and will suffice to ease the final pangs of childbirth without interfering with normal parturition and without risk to mother and fœtus, and therefore welcomes a full trial of the capsules. Mr. L. C. Rivett from his experience regards this method as safe and foolproof, and trusts that before long it will be available to all midwives who gain a certificate of proficiency in its use. Miss M. M. Cashmore, sister-matron of the British Hospital for Mothers and Babies, as a result of an admittedly short trial, believes that the capsules, used in combination with a general sedative, will prove a real means of diminishing pain. Dr. Rhoda Adamson, after a longer experience, considers that the capsules gave a definite degree of subjective help to the patient, but were insufficient to allow as deliberate a delivery as can be obtained with inhalation anæsthesia given by the drop method. On the other hand she had no doubt of the advantage of chloroform capsules at the time of delivery when the alternative was no relief at all. Less favourable opinions were given by Dr. Edith Phelps and Dr. J. M. Oldaker. The former feared that even the degree of chloroform analgesia promoted by the capsules might cause delay in delivery, and make it difficult for the midwife to leave one patient to attend to others; while Dr. Oldaker, alone of those contributing to the symposium, has found the capsules unsatisfactory except at the beginning of the second stage. In her experience, gained when resident anæsthetist at the obstetric unit of the Royal Free Hospital, she found that the state of light anæsthesia produced renders the patient excitable and unruly when the head is being born, so that coöperation with the accoucheur is impossible. Moreover, she has found it extremely difficult, with the 20 ♏ available, to get the patient beyond this unruly stage.

This symposium makes a good beginning to the investigations which are being promoted by the National Birthday Trust Fund. The varied opinions at least lend no support to the view that such a small dose can be no more than a placebo.

A Royal medal of the Royal Society has been awarded to Dr. Edward Mellanby, F.R.S., professor of pharmacology in the University of Sheffield and physician to the Sheffield Royal Infirmary, for his work on dietary factors, especially in connexion with rickets. The Society has awarded its Buchanan medal to Prof. T. Madsen, director of the State Serum Institute at Copenhagen, for his theoretical and practical work on immunity, especially in relation to diphtheria antitoxin. At the anniversary meeting on Nov. 30th, Sir Gowland Hopkins, M.D., will be recommended for re-election as president, and Sir Henry Dale, M.D., as one of the secretaries. Recommendations for the council include the names of Dr. J. A. Arkwright, Prof. A. V. Hill, Prof. E. Mellanby, and Mr. Wilfred Trotter.

THE Thomas Vicary lecture will be delivered by Mr. Francis Weston, F.S.A., next Tuesday, Nov. 15th, at 5 o'clock at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C. The foundation of this lecture is interesting. Thomas Vicary was Serjeant Surgeon to King Henry VIII and Master of the Barber Chirurgeons. In 1919 the Barbers' Company undertook to provide an annual sum of ten guineas every five years for the purpose of instituting at the college an historical lecture in anatomy or surgery, to be called the Thomas Vicary lecture, the appointment of the lecturer being left to the discretion of the college. In 1923 and again in 1930 the Barbers' Company renewed the donation. Sir John Tweedy was the first lecturer. Mr. Weston proposes in his lecture to tell of the London Guild of Barbers which incorporated the Barber Chirurgeons. Tickets of admission are not required.

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[1] See THE LANCET, Nov. 5th, p. 1024.

nature of mass-movement of dry or moist, warm or cold air, he demonstrated statistical data, proving that certain diseases are most prevalent at certain seasons of the year. It is well known that most of the infectious diseases of childhood reach their highest incidence in winter time; the same holds good, he believes, for the acute catarrhs of the upper air passages, for tetanic conditions, for eclampsia, hemiplegia, and even for ulceration of the duodenum and stomach. Prof. de Rudder distinguishes here between "climatic diseases" and "weather diseases." Some observers attribute the variations in the incidence of certain morbid conditions to variations of barometric, thermometric, or hygroscopic conditions of the air. Prof. de Rudder believes that to be due to changes of the electromagnetic condition of the atmosphere—i.e., to the effect of short-wave radiation. He suggests that when rheumatic subjects feel a change of weather conditions 24 to 36 hours before the actual change takes place they are feeling radiations from the approaching air masses. Prof. Moll discussed the therapeutic value of changes in climate. The children requiring "change of air" included anæmic, easily exhausted children, rather nervous, with little appetite, or with signs of late rickets, and those with chronic catarrhal affections of the air passages, and swollen glands. The first group were benefited by a prolonged stay at an altitude of 2000 to 4000 feet; the second group obtained more advantage from a stay at the seaside. These deductions had been drawn from observations on nearly 30,000 children, and the contra-indications to certain climates had also been learned. Patients with active disease of the lungs, with nephritis, acute and chronic arthritis, otitis media, and cardiac disorders were not, in Prof. Moll's view, fit for the seaside; tuberculosis of the bones and joints and glands obtained most benefit from higher altitudes (4000–6000 feet). A very important therapeutic factor was change of surroundings and of food.

INFANT PROTECTION CONFERENCE

In conjunction with this meeting the Deutsche Vereinigung für Saüglings und Kleinkinderschutz held its fifth convention on the following day, Prof. Roff (Berlin) presiding. The proceedings were devoted solely to the subject of tuberculosis, and four reports were presented. Prof. Hamburger (Vienna) spoke on the effect of heredity, natural resistance, and immunity upon the course of tuberculosis in children. He pointed out that in taking the history of the child one must also investigate all cases of infantile tuberculosis in the patient's family, not only that of the adults. The natural resistance against the tubercle bacillus being very inconstant, the time of first infection must be carefully sought; therefore he lays stress on a regular tuberculin test by Pirquet's method or by the percutan way, performed twice yearly on all not yet infected children. In the discussion Dr. Mommsen (Lübeck) reported on the fate of the surviving infants from the disaster at Lübeck. They were frail, suffered from intestinal troubles and anæmia, but showed no signs of primary tuberculosis. He believed that those who died received either a stronger dose or had a special disposition to infection.

Prof. Spitz (Mayence) discussed the expectation of healing of manifest tuberculosis in children. The earliest possible recognition of the infection was essential if a cure was to be obtained. At present over 25 per cent. of the cases coming to the sanatorium were brought too late. Prof. Spitz held that, especially girls of 8 to 10 years, if they were exposed to an infectious focus, should be examined regularly by X rays.

Prof. Langer (Berlin) pointed out that tuberculosis of the bronchial glands should receive great attention. A negative X ray picture was not sufficient. A searching clinical examination was necessary to ascertain whether or not the child was infected.

Prof. Duken (Jena) discussed whether the infected child should be sent to a health resort or a sanatorium. He believed that such children might regain health under their mother's care if properly supervised by the general practitioner. In opposition to this standpoint the Vienna school (Moll and Götzl especially) held that, not only the infected child, but even those endangered by their surroundings should be sent away. The congress supported this view.

IRELAND

(FROM OUR OWN CORRESPONDENT)

MILK LEGISLATION

In the Dáil last week Sir James Craig drew attention to the delay in introducing a Clean Milk Bill; clean milk being, he said, of vital importance to the State. The Minister for Local Government and Public Health, in reply, said that he hoped at an early date to put a proposal before the House and to promote legislation. The delay in dealing with the milk question is a discredit to both parties which have been in power during the last few years. Early in 1928 a commission on the milk-supply completed its report, suggesting legislation on certain lines, and it was promised that a Bill would soon be introduced. In July, 1929, the lines of the proposed measure were stated to the House, but, despite repeated questioning by Sir James Craig and others, no progress has since been made. The truth is that the agricultural interest is too strong on both sides of the House for any Government to find it easy to promote legislation which is likely either to increase the trouble or diminish the profits of milk-producers.

THE CARE OF THE ILLEGITIMATE CHILD

The problem of the care of the illegitimate child appears to be becoming more serious than formerly in the Irish Free State. Addressing a meeting of the Society for Prevention of Cruelty to Children last week, General E. O'Duffy, Chief of Police of the Irish Free State, stated that in 1929 13 infants were murdered, there were 49 cases of concealment of birth, and 10 cases of young children being abandoned; in 1930 12 were murdered, there were 46 cases of concealment, and 11 children were found abandoned; in 1931 7 were murdered, there were 59 cases of concealment, and 8 were found abandoned. Dealing with baby-farming he urged a more effective administration of the present law, and also legislative provisions for the more efficient supervision and control of those who took charge of children. His suggestions included registration and inspection of the premises of any one who proposed to undertake the care and maintenance of children for reward. The registration should be annual, and there should be not only periodic but surprise visits of inspection.

OVERSTRAND HALL AS SANATORIUM.—The Leicester and County Hospital Society has decided to purchase Overstrand Hall, Cromer, for £7000 for a convalescent home. The house, which is said to have cost £67,000 to build some 30 years ago, was one of the early works of Sir Edwin Lutyens, and formerly belonged to Lord Hillingdon. As it stands it will hold 50 beds.

record by the refusal to answer a lawful question, the judge may forthwith order the offender to be apprehended and imprisoned at the judge's discretion without further proof or examination. The High Court of Justice, the Court of Appeal, and the Court of Criminal Appeal are well-known examples of courts of record. The county court judges' power of committal for contempt is specifically dealt with in Sections 162 and 163 of the County Courts Act of 1888. Several generations ago the law officers advised that justices of the peace had no power to commit for contempt, and that the proper course was to indict the offender. Then came Section 7 of the Summary Jurisdiction Act of 1848, whereby a witness, appearing in court in obedience to a summons or warrant, may be committed to gaol for a period not exceeding seven days if he refuses to answer such questions as are put to him "without offering any just excuse for such refusal." If a witness appears voluntarily and is not brought before the court by summons or warrant, there is no such power to commit him. Whether the priest's explanation of his reasons amounted to "just excuse for such refusal" is not clear. The magistrates seem to have suggested that it did not, but, as already stated, the point was not pressed.

The position of priest and medical practitioner is in this respect comparable. The law may find means to put pressure upon each of them to answer some lawful question. There is no doubt whatever of the legal authority to exert this pressure. Judges and magistrates are sensible men, and will not be unaware of the substantial grounds on which a doctor claims (in the interests of his patient, of course, not in his own interests) the medical privilege which instructed public opinion approves. Thus a respectfully worded protest and explanation of the witness's difficulty will often win the court (as at Nottingham) to a tolerant recognition of the witness's genuine scruples and may avoid a crisis. If the court insists upon an answer, the witness may find himself in the position (which the witness at Nottingham would doubtless have adopted) of submitting to imprisonment with firmness in defence of the principle that confidence must not be violated. The less that such martyrdom can be accused of sham heroics or self-advertisement, the more impressive will be the effect upon public opinion. Without stirring public opinion the law will not be changed. Meanwhile there must occasionally be a definite clash between the admittedly well-founded principle of medical secrecy and the equally necessary condition of judicial authority. It is desirable that Parliament and Government departments should not multiply the occasions of conflict nor exacerbate them when they occur.

VIENNA

(FROM OUR OWN CORRESPONDENT)

CONGRESS OF GERMAN PÆDIATRICIANS IN VIENNA

A LARGE number of specialists on diseases of children, coming from many European countries and from North and South America, assembled last month in Vienna for the forty-third meeting of the Deutsche Gesellschaft für Kinderheilkunde, Prof. Freund, of Breslau, presiding. The discussions took place under three headings: (1) eugenic problems in pædiatrics; (2) pyuric conditions in children; and (3) the influence of atmosphere and climate on the child. In an introductory address Prof. Hamburger, chief of the Vienna Clinic for Children's Diseases, pointed out the progress made in research in this special branch within the last 40 years. Not only therapy, but especially prophylaxis, marked the advance in knowledge. A number of formerly lethal diseases such as diphtheria, scarlet fever, tetanus, tuberculosis, syphilis, and rickets had become much less frequent and virulent, or were on the verge of being exterminated. The prophylactic measures adopted by public health authorities, he said, had brought down infant mortality to low figures compared with the appalling percentage half a century ago. Welfare care for infants was chiefly responsible for the drop in the infant mortality-rates of many nations. Rickets, which 20 years ago was a disease of everyday occurrence, was nowadays almost extinct. Tuberculosis of childhood was less frequent and less dangerous; syphilis in children had become rare; nervous diseases in childhood however had increased in frequency, though it was also kept under better control.

The first communication (on eugenics) was presented by Prof. Pfaundler (Munich) who dealt with heredity, chiefly in connexion with twins, and laid special stress on the fact that besides the influence of the surroundings (the "milieu") a prominent part is played by hereditary strain ("erbliche Belastung"). These factors have hitherto been rather neglected in the study of pædiatrics. It is known that certain morbid conditions can be influenced by therapeutic measures, but they can be handed down from ancestor to progeny. Prof. Pfaundler's thesis was that advances in therapeutics may help the individual, but they endanger often the stock of health in the population. The physician is often faced by a dilemma. As a healer he should save life not worth living; as a eugenic statesman he should prevent a future danger to the community. For instance, juvenile diabetics can nowadays be kept alive by insulin, but they may live only to transmit their faulty or deficient metabolism to their descendants. Therefore the eugenic physician must study the disturbances caused by endocrine deficiencies or metabolic faults; and the pædiatrician must also be a matrimonial adviser. In the ensuing discussion the researches by Prof. Hammerschlag (Vienna) on hereditary deafness and deaf-muteness were praised, and the transmission of colour-blindness and hæmophilia were discussed.

The opening paper on pyuria was presented jointly by Nöggerath (Freiburg) and Lichtenberg (Berlin). They elucidated the problem from the standpoint of the pathologist and the clinician, and showed that the frequency of this condition is often underrated. Diagnosis should be easy if the possibility of pyuria is kept in mind in obscure cases of pyrexia. A lively discussion followed this communication, which was followed by papers on urographic methods on the child, by Frick (Giessen); chronic nephritis in childhood, by Geldrich (Budapest); and galactosuria in the child, by Fanconi (Zurich). A number of physicians presented papers on infectious diseases in infants, on the value of prophylactic vaccination and serum treatment in scarlet fever and in pertussis, and on myocardial complications in influenza and pneumonia. These papers came mostly from Hungarian and some Rumanian physicians. The third discussion, dealing with the effect of climate and weather upon the health of children, was opened by de Rudder (Munich) and Moll (Vienna). The first-named has studied the effects of climatic conditions upon start and development of disease. After explaining the effects of cyclone and anticyclone, high and low barometric pressure, and showing the paper again. However, when a doctor gives a certificate which contains an untrue statement he can be brought before the General Medical Council; there is no similar tribunal to deal with the clergyman, the bank manager, and the other select few nominated by authority as competent to do this work.

The seventh visit was to the elderly maiden lady whose finances I supervise. She has swollen feet and has recently been moved from the home of her ancestors to a furnished bed-sitting room, where I hope she will be able to pay her way and not get further into debt. I report the size of her overdraft, that her house has not been let by her agents, and that I have had to persuade one of the people to whom she is indebted not to issue a summons. All these things she takes cheerfully. In return she tells me how necessary it is for a cat to take liver only half cooked, and assures me she will be the possessor of much wealth very shortly. There is not much medical treatment in this case, nor much hope of affluence in the future. The next visit was to an elderly lady whose heart is frequently troublesome, and who had been stung by a wasp; the sting looked angry. Then to a young servant girl who has acute rheumatism, temp. 102° F., swollen wrists, and painful left knee. She was going on well.

The tenth visit was to an elderly maiden lady who has early glaucoma in the left eye, with attacks of pain, defective vision in that eye, a high blood pressure, and general feebleness. She was better, and I was not able to make out any increased tension in the left orbit by palpation. She finds time hang heavy as she is unable to get about quickly enough to keep warm. The eleventh and last visit before lunch was to a young school-teacher who suddenly developed German measles. The mother rather hopes that the father will be sent home from his work owing to the infection, but this does not happen. The girl is really very well in spite of a heavy rash.

AFTERNOON

A light and quick lunch was taken at 1.45, and soon after 2 P.M. more patients came for consultation. The first was a heart case, also suffering with pruritus. These cases are difficult to cure. The second was a lady at the climacteric with early myxœdema, who was taking thyroid. Her improvement was noticeable, and she was very grateful. The third case was a woman whom I had sent into hospital for an ectopic gestation some weeks earlier. She had had one miscarriage before, and she wanted to know whether it would be safe for her to have a child. Would she have another ectopic? Not an easy matter to advise upon. The last consultation of the afternoon was with a young wife who suffers from slight alopecia of the scalp and nervous depression. She was worried about her husband; she had found him out telling her lies about his movements, and there were two used theatre tickets in his coat pocket. Money was short, and she did not know what to do about it. Would she go bald, and so never be attractive to her husband again? She was given some lotion for the hair, medicine for her nerves, and some advice on men and women designed to allay suspicions.

As I was about to change for tennis I received a message from my partner asking me to see a rash he was doubtful about. The small boy seemed very ill; was it an infective condition? So I took the car out again, and on the way back I wrote out prescriptions at the chemist's shop for patients requiring medicine to be made up and delivered as soon as possible. After tea I changed and went to the club, but in the middle of the second set I was called to the 'phone about the boy I had seen in the morning with fever and diarrhœa. His temperature was 104° F.; would I come along. So I had to return home, change back into ordinary clothes, and go to see what was the matter. The boy was really the patient of my partner who had been away for the week-end and was taking surgery on this night. On my return from this visit I discussed the whole case with him, and told him what I had done and asked him to carry on. Soon after 7 P.M. I dined, and feeling somewhat tired after my day's work I read a book until bedtime.

Other Days

Is this a normal day's work? Doctors vary in their statements as to the number of patients seen in a day; one man will say he has paid 120 visits, another that he has seen 50 people to-day. The first statement means that he has called at 120 houses, and has been told at most of them that the patient was going on all right. At such houses he made no examination; through experience of the appearance of an ill person he decided the statement was true, and he went on to the next case. Some practitioners are very clever at this sort of thing: eventually they make some ghastly mistake which may ruin their whole life. The other man probably means that he has seen 10 people in the surgery in the morning, 15 people in the evening, and visited 25 persons at their homes. This amount of work is quite consistent with efficient attendance, but allows no time for discussing the vicar or the young person who is always out late at night, to say nothing of politics. It is my opinion quite definitely that the practitioner who takes proper care of the cases he visits and makes sufficient examinations of those that require it, will have to be quite a fast worker to be able to do 30 visits between 9 A.M. and 6.30 P.M. Locality of course makes a difference.

If you are on the surgical or medical staff of a local hospital you may be called to an emergency or have to attend patients in the hospital. This work is done gratuitously. You may receive year by year only a formal vote of thanks from the governing body controlling the hospital, but you will gain experience in the treatment of difficult cases. Another duty you may have to work into your day is to take a patient to see a consultant, which takes time but is worth it. Misunderstandings are avoided and details of new treatments appreciated. And remember the consultant is a person who knows more and more about less and less, and is often glad of the practitioner's general knowledge. Part of the day will be filled up in attending meetings where your presence will be welcome if you show that you are keen to help your fellow practitioners. Schemes of public medical service for contract attendance on the dependents of insured persons are springing up all over the country; these schemes need local committees to run them. The panel committee of your area will want representatives. Travellers will want to interview you about the latest appliances, drugs, and instruments; I should like to pay tribute to the tactful way in which these men impart valuable knowledge to practitioners who will listen to them. Nurses are frequent visitors to the surgery endeavouring to obtain work for which they may have special training. In the early days of practice there will be frequent interviews with life insurance representatives, all eager to ensure your life and probably to make you an examiner of their company for your area.

This does not pretend to be a full list of the duties that fill up the general practitioner's day. He does not make a large income but his life is very interesting.

Articles in this series will include among others:—

County Health Officer.
The Policeman's Doctor.
An Indian Day.
Practice in a Country Town.
The Medico-Legal Expert.
Giving Anæsthetics.
The Coroner.

THE Export Brand of COW AND GATE MILK FOOD has been awarded the Grand Prix at the Salon d'Alimentation, Brussels, the important Food Exhibition in Belgium.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

I.—GENERAL PRACTICE IN A CITY

THE layman's idea of the sort of life the practitioner leads is revealed in phrases such as: "I should not like my nights to be disturbed.' . . . "It must be terrible to be called away to some case just as you are going out for the evening." . . . "Fancy never to be able to make a definite engagement." Yet in actual practice, I think, unless there is an epidemic or a bad patch of emergency calls, this inability to keep a private engagement does not occur weekly, or even monthly. No doctor is bound to go to a street accident or to attend a person who sends for him. He has a perfect right to say "No, call in some other doctor," although he may hesitate to act in this way. While, however, he has a free hand with his private cases he has no such right if he is under agreement to attend an insured person. He must then under penalty respond to any message, and if through professional engagement, absence from home, or other sufficient reason he cannot himself attend, it is his duty to provide a deputy. For this sort of work he is very definitely on duty (self or deputy) for 24 hours in the day.

The following is an account of one recent day's work. I am a member of a firm in a London suburb, and this day probably represents a little above the average amount that I would normally do at this season of the year. It will be seen to include duties which might not be regarded as professional work, but which have to be undertaken for elderly people alone in the world by someone familiar with their wants, their means, and their aspirations.

A Particular Day

On this particular day the night-bell rang at 6 A.M. and a man's voice in the speaking-tube said would the doctor come at once to Mrs. X at the address given; a maternity case, nurse had sent him to ask me to come. The address was not far away, but the name was not known to me as a patient or as a confinement that I was expecting to attend; so after dressing I went to the surgery and looked up this patient's card, and found that my partner had made arrangements for the attendance whilst I was away on holiday. Her measurements were put down and were normal, so collecting the midwifery bag, and having made certain that the stocks it contains of pituitary extract, chloroform, sutures, antiseptics, &c., were in order, I set out and arrived at the case in about 20 minutes from the time I was called. Pains were normal, but progress was slow, and as she began to get tired I decided at about 7.30 to give a little help. I got back at 8.30 to breakfast, after which a shave and a bath made one feel presentable for the morning's work.

NINE O'CLOCK SURGERY

Six patients arrived for attendance. The first was a girl with a nasal catarrh; she did not look well, and the question of early tubercle was considered. The apices of her lungs, back and front, were listened to without discovering any abnormal sounds, and she was given a good tonic and told to return if not better. The telling of a patient when to return to see you again is quite an important duty. It is easy to do with panel patients because it costs them nothing, but I have always felt it a little difficult with private patients because of course it costs them a consultation fee each time they come; patients, however, expect you to tell them this, and I have on more than one occasion been surprised to hear a patient who was obviously ill say that he did not come back as he had not been told to. On the other hand, patients do appreciate the honesty of being told they need not return unless something else crops up to need attention.

The next patient was a man complaining of pain in the back and a cold. He had been working hard in a close atmosphere and getting very hot. Nothing organic to account for his pain was found, and he went away with some medicine apparently satisfied. Then followed a patient, who comes weekly for her panel certificate, suffering from nerve exhaustion. She has had both her ovaries and uterus removed years ago, and in spite of treatment of all sorts, including organotherapy, is still quite unfit for work. She is a loyal patient with implicit confidence in her doctor, but she is rather hysterical, easily annoyed, and extremely sensitive about being thought fit to work. She was sent to the regional medical officer some time ago, and the worry of that visit is still present in her mind. She resents the suggestion that she is thought by her sick visitor to be fit to work, when she has produced a certificate to the society from me saying she is unfit. This patient does not now take medicine unless she is worried by domestic affairs. She has had much trouble with her landladies and consequently many changes of address.

After this came a request from a widow for me to sign a certificate for pension purposes. As the pensioner's signature has to be recorded in my presence, I told the messenger I must make a visit for this purpose as the woman is not well enough to come to me. The last patient had been stung on the leg by a wasp; she had read in the paper how dangerous these stings could be, and would she be all right? She was reassured, treated, and left happily.

THE MORNING ROUND

Writing work followed, and at about 11 A.M. I started my round. The first visit was to an old lady with thrombosed varicose veins in her leg; she suffers from gout, and is inclined to make the most of her trouble. She was definitely better but still complained of pain; she was taking iodide and wanted more medicine. The second visit was to a small boy ill in bed with fever and diarrhœa. I had seen him two days previously, and in spite of careful examination could find nothing to account for his temperature. Paratyphoid, food-poisoning, tubercle were thought of, but nothing definite was again discovered. The case was too early for a Widal reaction to be of value, and I decided to wait and see what happened. The third visit was to the confinement of the early morning. She was going on satisfactorily. The mother had wanted a boy, but was now quite pleased with the girl and had no desire for me to put it back. I visited the chemist who does our dispensing, ordered some medicine to be sent, and then called at the bank to find out the size of my own overdraft as well as that of a patient whose finances I have to supervise.

The fifth visit was to a man with hæmaturia who is on my panel, but not drawing sickness benefit as he is over age. I suspect a papilloma of the bladder, but he refuses to have a special examination at hospital, and is quite comfortable in bed, and the bleeding is settling down. The sixth visit was to the widow who sent up to ask for a pension certificate. This sort of work, as well as the signing of passports, is much on the increase, and they entail an appreciable amount of work and time, when added up for the whole year. The passport does not need to have the signature witnessed but the pension paper does, and makes an extra visit for the day. These people as a rule are poor as well as old, and to get them to sign their name a second time—for they generally bring the paper up already signed—takes time. There is something wrong with the pen, or they cannot find their glasses, or they argue that Dr. X never asked them to sign the and in the recent papers by van Rooyen (ibid., April 15th and Sept. 1st, 1932).

I shall be pleased to supply workers interested in the subject with cultures of the amœba.

I am, Sir, yours faithfully,

ALDO CASTELLANI.

The Ross Institute, Putney Heath, S.W., Nov. 2nd, 1932.

AN ANOMALY OF THE COLON

To the Editor of THE LANCET

SIR,—In your issue of Oct. 29th (p. 940) Prof. Elliot Smith refers to a case exhibiting an anomalous pelvic colon which was found occupying the right side of the abdomen. As the condition appears to be of great rarity it may be of interest to record that only a few days before reading his communication I opened an abdomen by a grid-iron incision for appendicitis, and found the whole of the right iliac fossa occupied by a large loop of pelvic colon. The mesenteric attachment of the loop was well over to the right side of the middle line, whence it descended into the pelvis to join the rectum. I was at first tempted to believe that I had to deal with a transposition of the viscera. Further exploration, however, revealed the true state of affairs, the cæcum and offending appendix being found in the extreme right of the abdomen, separated by coils of small intestine from the abnormally situated pelvic colon.

I am, Sir, yours faithfully,

FRANK FORTY, F.R.C.S.,
Surgical Registrar, General Hospital, Birmingham.

Nov. 2nd, 1932.

AUXILIARY TREATMENT OF TOXIC DIPHTHERIA

To the Editor of THE LANCET

SIR,—Dr. Woodcock, in her article on the auxiliary treatment of toxic diphtheria with glucose and insulin (THE LANCET, Oct. 22nd, p. 894), when speaking of blood-sugar estimations, writes: "Anything in the nature of a routine tolerance test was considered to be out of the question."

We desire to draw attention to the importance of controlling this treatment by repeated blood-sugar estimations. The adequate insulin dosage is often high, and such tests are obviously essential for the avoidance of hypoglycæmia and its attendant deterioration of the myocardium. We agree with Dr. Woodcock that repeated venepuncture is impossible, and it was for this reason that the method of Crecelius and Seifert was adopted by us. At no time did we fail to obtain 0·2 c.cm. of capillary blood from the lobe of the ear.

We believe that the degree of disorder of carbohydrate metabolism is directly dependent on the severity of toxæmia and, therefore, a blood-sugar curve performed as soon as a patient comes under treatment is of considerable assistance in the treatment and prognosis of the case. Further periodical consideration of the glucose-tolerance curve offers valuable information as to the progress of the patient.

We are, Sir, yours faithfully,

E. C. BENN,
F. HUGHES,
STANLEY ALSTEAD.

City Hospital, Little Bromwich, Birmingham,
Nov. 1st, 1932.

To the Editor of THE LANCET

SIR,—I am glad to see from Dr. Woodcock's communication that the value of intravenous glucose treatment in diphtheria is being gradually appreciated. In her publication she combined it with insulin administration. From the work done in this hospital during the past three years we have come to the conclusion that the administration of insulin is not a necessary part of the treatment in all cases. Half of our bad cases have had no insulin and have done very well without. The essential part of the treatment is to procure a hyperglycæmia of some duration. Unless enough glucose is given to produce this, no effect is produced. No amount of glucose given by mouth or subcutaneously will effect any striking benefit, as it never reaches a high enough concentration in the blood. Our work has been based on the hypothesis that diphtheria toxin acts by reducing the negative potential of the colloid particles of the blood, thus tending to produce colloid flocculation. Glucose, being a reducing agent, might overcome this effect in high concentration. To prolong this effect we administer tincture of iodine, alkalis, and thyroid by mouth[1]; if glycosuria persists for more than six hours we then give insulin to stop it. This line of treatment was suggested by McDonagh's work.

Compared with the later results from Birmingham (with glucose and insulin only) our methods have given a greater reduction in the death-rate and a lower incidence of paralysis amongst the survivors. Since 1921 the type of diphtheria present in Bristol has been severe, so that the results given below for the last five years are comparable.

	Total cases.	Deaths.	Case-mortality (per cent.).
Orthodox treatment, 1928–29	1235	67	5·4
New treatment, 1930–32	2312	68	2·9

The second series of figures are the malignant "dangerously ill" cases extracted from each group. The intravenous treatment has been applied to this second group of cases only; the condition of the remainder of the 2312 did not warrant this treatment.

	Dangerously ill cases.	Percentage of total admissions.	Deaths.	Case-mortality (per cent.).
Orthodox treatment, 1928–29	243	19	67	27·5
New treatment, 1930–32	463	20	68	14·7

It will be seen that over a large series of cases, whether based on the total completed cases or the malignant cases, the death-rate was nearly halved. In our experience, if 90–120 c.cm. of 20 per cent. glucose and colloidal iodine is given on admission with intravenous antitoxin, with or without insulin, and followed by our other accessories, a second injection is rarely necessary. Over much interference with these desperately ill patients is to be deprecated. Too much glucose can be definitely harmful.

I am, Sir, yours faithfully,

B. A. PETERS, M.D.,
Medical Superintendent, Ham Green Hospital, Bristol.

Nov. 2nd, 1932.

THROMBO-PHLEBITIS MIGRANS AND THROMBO-ANGIITIS OBLITERANS

To the Editor of THE LANCET

SIR,—The two interesting papers, by Dr. Walker and Dr. Kletz respectively, on Thrombo-phlebitis Migrans in your issue of Oct. 29th (pp. 936, 938) give the impression that this type of case was first described and named by Moorhead and Abrahamson in 1928, but in the *Mitt. a. d. Grenzgeb d. Med. u. Chir.* for 1909 (xix., 727) the subject of Springende

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[1] See THE LANCET, 1930, ii., 579.

CORRESPONDENCE

"A COURSE IN OSTEOPATHY"

To the Editor of The Lancet

Sir,—I have just read your summary (Nov. 5th, p. 1016) of a lecture lately delivered to old students of University College Hospital by Mr. Clifford White on chronic pelvic pain. In the course of his remarks Mr. Clifford White is reported to have said, "The treatment of sacro-iliac strain, in my opinion, should be by manipulation at the hands of a qualified man who has taken a course in osteopathy." It would be interesting to know where the students of University College Hospital are advised to go for "a course in osteopathy," and whether Mr. Clifford White has any first-hand knowledge of this particular form of American activity. It may not be irrelevant to remark that University College is the only teaching hospital in London that has not got an orthopædic surgeon on its staff.

I am, Sir, yours faithfully,
A. S. Blundell Bankart.
London, W., Nov. 4th, 1932.

CARBOHYDRATE METABOLISM IN TOXIC GOITRE

To the Editor of The Lancet

Sir,—Under this heading you comment (Oct. 22nd, p. 908) on some recent work by H. J. John on the relationship between hyperthyroidism and diabetes mellitus as it appears clinically. Experimentally, a good deal of evidence exists which throws light on this relationship, and since no reference is made to this either in your comment or in Dr. John's article, I venture to summarise briefly this evidence. I have dealt with it at greater length in my book "Fever, Heat Regulation and the Thyroid Adrenal Apparatus," where also the application of the experimental findings to clinical conditions, including the glycosuria of hyperthyroidism, is discussed.

The experimental investigation has shown that hyperthyroidism and diabetes mellitus have many fundamental features in common. There is in both hyperactivity of the glycogenic function of the liver, meaning thereby an increased formation of carbohydrate from protein and a more rapid pouring out of sugar into the blood. This accounts for the similarity of the nitrogen metabolism in both conditions, and also for the fact that the liver is rendered glycogen-free both in experimental hyperthyroidism and in experimental diabetes. The absence of glycogen in the liver in these two conditions should not be interpreted as being due to an inability to "store" glycogen. One difference between the two conditions is that in diabetes mellitus the increased pouring out of sugar into the blood stream occurs in an organism in which the power of the tissues to oxidise sugar is impaired, so *that the blood-sugar rises and* sugar appears in the urine, while in hyperthyroidism there is general sympathetic stimulation with increased cellular activity, so *that the increased output of sugar* into the blood is dealt with by increased oxidation. The blood-sugar does not rise, therefore, and no sugar appears in the urine, but it is clear that glycosuria can appear more easily in such a condition than in a normal organism.

The essential dissimilarity between the two conditions lies in their intrinsic ætiology. The glycogenic function of the liver is influenced on the one side by the internal secretions of the thyroid and adrenal glands which stimulate it, and on the other side by the secretion of the islands of Langerhans which inhibits it. Hyperthyroidism—and hyperadrenalism—produce an increase in the glycogenic function of the liver as part of the general sympathetic stimulation, whereas in diabetes mellitus the operative removal or insufficient functioning of the Langerhans islets produces an increased glycogenic function by removal of an inhibition.

This conception is based essentially on the view of the glycogenic function of the liver as an autonomous internal secretion, and not as is generally done as a means of providing a "store" of carbohydrate in the liver. I have discussed the difference implied by these two conceptions at some length in my book, and it would take too much space to discuss it here. But as an example I may quote here the view expressed by Dr. John in the summary of his article, that of the factors which influence the "glycogenic depletion" of the liver one is: "a high metabolic rate which causes increased consumption of carbohydrate and depletes the insulinogenic stores, with resultant depletion of the glycogen store in the liver." This is tantamount to stating that when the speed of a motor-car is increased and more petrol is consumed, the increased speed—i.e., the high metabolic rate—causes the increased consumption of petrol, whereas, of course, exactly the reverse represents the causal connexion.

The conception outlined above enables us to understand why in hyperthyroidism glycosuria may appear more readily than in a normal organism, why insulin has a beneficial effect in hyperthyroidism, why the reverse combination—thyroid administration in diabetes mellitus—has a harmful effect, why the fever produced by certain bacterial infections aggravates the hyperglycæmia and glycosuria in diabetes mellitus, and a number of other clinical observations.—I am, Sir, yours faithfully,
W. Cramer.
Imperial Cancer Research Fund, Nov. 3rd, 1932.

PROTEOLYTIC FERMENT IN AMŒBIC DYSENTERY

To the Editor of The Lancet

Sir,—In your issue of Oct. 29th (p. 972) Dr. H. M. Woodcock states that there are many reasons for doubting that amœbæ may secrete a proteolytic ferment. It is interesting to note, however, that there is an amœba (*Hartmanella castellanii*, Mackenzie Douglas) which secretes a proteolytic enzyme with certainty, as, when grown on gelatin and serum, it will produce liquefaction of these media. Moreover, if an emulsion of the amœba is filtered through a Berkefeld candle and a few drops of the filtrate are placed on a gelatin slope, pitting of the medium will be produced within 24 to 48 hours. To grow the amœba on gelatin or serum, the presence of certain bacteria or fungi (alive or dead) is necessary, but I have used in my experiments a bacterium and a fungus which do not produce liquefaction: *Bacillus typhosus* and *Cryptococcus pararoseus*. Of course these experiments do not mean that the ferment will have a lytic action on living cells and tissues; they simply mean that a proteolytic ferment may be produced by an amœba. Further particulars of this amœba may be found in my paper in the *Journal of Tropical Medicine and Hygiene*, July 1st, 1930, in a paper by Mackenzie Douglas (ibid., Sept. 1st, 1930), Prigosen undertook an investigation on similar lines with mice and failed to get any evidence of it. Dr. Cramer is adopting a novel method of scientific criticism in stating that the negative results of Wood and Prigosen mean that we cannot maintain the positive nature of our own results. Not a single criticism has been made against the technique by which we obtained these results, while negative findings may easily be due to lack of observance of the many points in technique which are essential if a positive result is to be obtained. We have, on several occasions, drawn attention to the fact that the response of animals to tumour inoculations depends on the nature of the material inoculated. An animal may become effectively protected against tumour growth or it may show the opposite effect, so that the tumour grows in it at a more rapid rate than in the normal animal. It is easy to point to factors which may bring about negative results, but it is surely unwarranted to set aside the positive so lightly. To illustrate the influence which the condition of the tumour has on its power to confer immunity we have made a table of data which have already been published in various journals, showing the extraordinary range of effect produced by inoculations of tumour cells depending on their treatment and condition at the time of inoculation. In three of these experiments rats have been given an inoculation of tumour tissue, afterwards they have been given a test inoculation at the same time as controls in order to find out what degree of immunity has been produced by the first inoculation.

TABLE

	Units.
Volume of control tumours taken as	100
Volume of tumours in rats treated with irradiated rapidly growing tumours (lethal dose of radiation) ..	7
Volume of tumours in rats treated with irradiated tumours which had stopped growing but were not obviously necrotic (lethal dose of radiation)	52
In rats bearing two tumours, one being given a lethal dose of irradiation, volume of non-irradiated tumours compared with controls in untreated rats	35
Volume of tumours in rats treated with extract of autolysed tumour..	266

The dose of irradiation given to the tumour is of the greatest importance, as if it is not enough the tumour will grow, and if irradiated too long the tumour tissue loses its immunising properties.

Dr. Cramer states (p. 97) that:

> "tumour strains which show spontaneous regression frequently, such as mouse carcinoma 206 or Jensen's rat sarcoma (J.R.S.), are utterly unsuited for radiotherapeutic experiments, and indeed for all therapeutic experiments.'

This is followed a little later on by an illustrative experiment which runs as follows:

> "A rat is inoculated with a piece of J.R.S. The tumour grows progressively; ten days after the first inoculation a second inoculation is performed on the opposite side. This second inoculation is then negative, that is to say the animal has become 'immune.'"

Dr. Cramer's views of Jensen's rat sarcoma are those of many years ago, and do not take into account the progress which has been made in the technique of propagation of this tumour. In the early days inoculations were made with no particular care to ensure the most healthy condition of the tissue, and without knowledge of the many factors which influence results. The J.R.S. as we have it growing at the present time has many of the characteristics of a spontaneous tumour. Spontaneous absorption very rarely takes place, practically all the tumours grow progressively, metastases are common if the rat is allowed to live long enough, and successful treatment seems to depend upon the same factors as the treatment of cancer in man. We have found that when the tumours grow progressively the rats are not as a rule immune to a subsequent inoculation, in contrast to Dr. Cramer's statement; perhaps our criterion for "progressive" growth is different from that of Dr. Cramer.

It is curious to find that Dr. Cramer thinks this tumour of no value for therapeutic investigation, in view of the fact that the technique adopted for the treatment of uterine cancer at the Marie Curie Hospital has made use of the experimental investigations on the lethal action of radium on this tumour. This clinic has systematically published its results, and how far its attempts to modify the technique, on the lines suggested by laboratory investigations, have been justified may be seen by reference to the last radium report of the Medical Research Council.[3]

The greater part of Dr. Cramer's article is concerned with the effects of radium irradiation upon tumour behaviour. He does not seem to recognise that the results of irradiating living structures depend almost entirely upon the dosage employed, the term "dosage" including not only the quantity of energy liberated and the way in which it is liberated, but also the type of radiation used. It sounds almost commonplace to say that all living tissues can be damaged by radiation to the extent of complete necrosis if enough radiation is applied. The whole subject is bound up with the question of dosage, and Dr. Cramer gives very few details of this very important side of his investigation, and yet he does not refrain from ex-cathedra statements on the subject. On p. 97 he says, with reference to his own experiments on the irradiation of a tumour, "these experiments represent the most favourable conditions for the demonstration of any general therapeutic action of radium, if such an *action* existed." In order to find the most favourable conditions it would certainly be necessary to work over a very large range of radiological variations, but we find no evidence that he has done this, and in fact he cites an experiment with a radium capsule which he considers to be on the most favourable lines, which we should feel inclined to condemn on many technical counts. Dr. Cramer attempts to irradiate a tumour in the mouse by applying to its surface a radium capsule containing about 58 mg. of radium and screened by 0·18 mm. of silver. Most of the effects would be due to the beta rays and these are rapidly absorbed in going from layer to layer, so that there would be very big variations in the dose given to the tumour cells in the various parts of the tumour.

Finally Dr. Cramer gives the details of certain experiments contrasting the effects of in-vitro and in-vivo doses on tumours. These can quite easily be reconciled with the experimental fact that was shown in a publication in the *British Journal of Radiology* five years ago,[4] that the growth of a tumour is profoundly influenced by irradiation of the tissues in which it is growing, even when the tumour itself is not irradiated.

The evidence seems to us conclusive that in the case of transplanted tumours in rats the absorption of tumour tissue can lead to the development of an acquired immunity, and this can affect an established tumour and it persists throughout the animal's life. Radiation is one method of causing the absorption of tumour tissue.

The fact that most cases of untreated cancer in man die of the disease and only show a temporary and varying resistance to the progress of the growth,

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[3] Special Report Series No. 174.

[4] The Growth of Tumour in Tissues Exposed to X Rays and Radium, Brit. Jour. Rad. (B.I.R. Sect.), 1927, xxxii., 289.

Thrombosen—that is to say, attacks of thrombosis springing or *migrating* from one place to another—was dealt with by Karl Försterling, who gave references to previous literature. In 1907 I consulted the late Sir A. Pearce Gould in regard to a typical sufferer of the kind because he had described a remarkable case in his Lettsomian lectures (*Trans. Med. Soc. Lond.*, 1902, xxv., 165); his patient "out of 25 years had spent no less than six years, two months, and one week invalided by these successive clottings." Pearce Gould, however, did not use the term "migrating" thrombosis or thrombo-phlebitis.

In a recent paper with Dr. E. Schwarz on Thrombophlebitis Migrans vel Recurrens (*Practitioner*, 1928, cxxviii., 421) I referred to a case associated with Buerger's disease (thrombo-angiitis obliterans), which I have observed at intervals since May, 1906.

The patient, a Russian Jew, now aged 66 years, came to England at the age of 25, and the symptoms of thrombo-angiitis obliterans commenced gradually at the age of 38, with intermittent claudication in the left leg. The disease progressed by exacerbations, both lower extremities and the right upper extremity becoming involved and besides the typical symptoms he suffered from attacks of superficial thrombo-phlebitis, notably of the cutaneous nodular type. Since 1924 there have been no active signs of the disease, but the patient has had slight attacks of gout, and has developed permanent high blood pressure.

When I first described this case in *The Lancet* for Jan. 18th, 1908 (p. 152) under the heading *Arteritis* Obliterans of the Lower Extremity (with references to other cases) Buerger had not yet published his first paper on the subject of thrombo-angiitis obliterans; the thrombo-phlebitis portion of the disease showed itself later on in this case. Buerger's first communication was to the New York Pathological Society in March, 1908, and in the *American Journal of Medical Sciences* for October, 1908 (cxxxvi., 567), he published another excellent study of the subject. Its association with "migrating thrombo-phlebitis" was specially considered by him in the *International Clinics* in 1909 (19th series, iii., 85) and in the *Journal of the American Medical Association* in the same year (1909, lii., 1319).

I am, Sir, yours faithfully,

London, W., Nov. 6th, 1932. F. PARKES WEBER.

AMBULATORY TREATMENT OF LEG FRACTURES

To the Editor of THE LANCET

SIR,—In your issue of Nov. 5th (p. 1012) is an annotation describing my apparatus for the reduction of fractures of the shafts of the leg bones, and discussing the after-treatment which I employ. May I be allowed to avoid possible misconceptions by amplifying the statement that these cases are allowed to walk in plaster from the third week? This is only true of transverse fractures, completely reduced, and completely immobilised. In oblique and spiral fractures, weight-bearing is deferred until the sixth week. On the other hand in Pott-Dupuytren fractures weight is borne from the first day. No patient with a fracture of both leg bones is allowed early weight-bearing unless reduction is quite perfect. It is not enough that the alignment be perfect; there must also be accurate end-to-end apposition. If this condition is satisfied, any weight which may be borne through the tibia itself will merely impact the fragments, and if the plaster fits so closely that the fragments cannot angulate, they cannot over-ride.

The advantages of early weight-bearing are undoubted. Consolidation of the fracture is accelerated, muscle atrophy is avoided, adhesion formation is minimised, and the patient is less inconvenienced than by any alternative method of treatment. But unless the surgeon is entirely satisfied that no displacement remains, and that the plaster is so skilfully applied that the fragments cannot move within it, it would be better to avoid the luxury of early weight-bearing. The apparatus was designed primarily to facilitate perfect reduction by a conservative method. It may be that some surgeons are sufficiently expert not to require its assistance, but for the surgeon who finds these fractures difficult to reduce it is invaluable.

I am, Sir, yours faithfully,

Liverpool, Nov. 7th, 1932. R. WATSON JONES.

TYPHOID IN YORKSHIRE

To the Editor of THE LANCET

SIR,—In your issue of Nov. 5th it was stated that a girl, a resident of Denby Dale, returned home after spending a holiday at Scarborough and that on a later date she was found to be suffering from typhoid fever. This came as a surprise to the people in Scarborough as there has been no case of typhoid contracted in this town. It is true that the Scarborough corporation came to the help of their neighbours, the Malton council, and received Malton patients in their sanatorium. Inquiries have been made and it has been found that the girl in question did not take her holidays in Scarborough but was a visitor to a village some miles distant from Scarborough, in an area which is not supplied by the corporation with water.

As the statement in your paper is liable to prejudice the reputation of Scarborough for a supply of wholesome water, I should be obliged if you would give publicity to this letter equal to that of the somewhat misleading (though I am sure not intentionally misleading) statement in your last issue.

I am, Sir, yours faithfully,

JUAN BUTLER,
Mayor.

Town Hall, Scarborough, Nov. 7th, 1932.

REACTIONS FOLLOWING TUMOUR IRRADIATION

To the Editor of THE LANCET

SIR,—The object of the following remarks is to draw attention to some statements in Dr. W. Cramer's paper, entitled Experimental Observations on the Therapeutic Action of Radium, in the Tenth Scientific Report of the Imperial Cancer Research Fund.[1] On p. 98 Dr. Cramer says:

> "Several authors (Contamin, 1910; Wedd, Morson, and Russ, 1914) have suggested that a condition of immunity could be induced by inoculating a piece of tumour which had been irradiated 'in vitro' for a period sufficiently long to prevent its growth after inoculation, and that by this procedure it was possible to influence the growth of tumours which were already established. Wood and Prigosen (1915) have shown in a very extensive series of experiments involving several thousands of mice that such a claim could not be substantiated for transplanted tumours."

Dr. Cramer has written to us and explained that this reference (Wedd, Morson, and Russ) really refers to a paper published by us in THE LANCET in 1922.[2] This paper gave the details of experiments showing that not only can a condition of resistance to tumour implantations be set up in a rat by treating it with injections of irradiated tumour, but that an established tumour can be considerably hindered in its growth by similar treatment. Three years later Wood and

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[1] THE LANCET, Oct. 15th, p. 860.

[2] Ibid., 1922, i., 212.

MEDICAL NEWS

niversity of Oxford

The Radcliffe prize, which will again be awarded in 1933, of the value of £50, and is awarded by the Master and llows of University College, for research in any branch the medical sciences.

It is open to all graduates of the university who have taken, are taking, a medical degree in the university, and who have ken the degree of bachelor of arts within the last 12 years. ndidates must send in their names to the Secretary of Faculties, niversity Registry, Oxford, on or before Dec. 1st, 1932.

An examination will take place on Saturday, Nov. 26th. 4 P.M. in the department of physiology, for the Francis otch memorial prize. Candidates should send in their ames and qualifications to the board of management, epartment of physiology, Oxford, not later than Saturday, ov. 19th.

The next award of the Rolleston memorial prize, which is ow of the value of about £100, will be in Trinity term 1934.

It is granted for a piece of original research in one of the llowing: animal and vegetable morphology, physiology and athology, and anthropology. Memoirs already published are dmitted to the competition. Candidates should be graduates r research students of Oxford or Cambridge of not more than x years standing, and within ten years of matriculation.

niversity of Cambridge

On Nov. 5th the following degrees were conferred :—

M.D.—M. C. Andrews and J. H. B. Martin.

M.B. and B.Chir.—J. F. Varley.

M.B.—D. B. Cater.

B.Chir.—*J. W. Bromley, J. O. Poynton, and O. S. Tubbs.

* By proxy.

English Conjoint Examining Board

At the Final Examination, held from Oct. 3rd to 26th, the following candidates were approved in the subjects indicated below, but are not yet eligible for diplomas :—

Medicine.—F. C. Abeyesekera, Ceylon and King's Coll.; L G. Anderson, King's Coll.; G. Barasi, St. Bart.'s; R. Bennett, St. Bart.'s; J. G. Bentley, St. Bart.'s; H. W. Burge, King's Coll.; N. Chakravarty, St. Bart.'s; D. D. Coleman, Charing Cross; Patience Craig, Manchester; C. J. Evans, Guy's; R. M. Farrington, Cardiff; H. C. A. Harris, Camb. and St. Thomas's; R. V. Harris, St. Bart.'s; P. G. F. Harvey, St. Bart.'s; A. J. Helfet, Liverpool; G. A. H. Herbert, London; E. C. Herten-Greaven, Camb. and London; J. H. Hudson, Leeds; W. R. S. Hutchinson, Camb. and St. Thomas's; Grace M. Jones, Cardiff; F. B. Khambatta, Bombay; B. H. Kirman, King's Coll.; S. B. Levy, Liverpool; M. B. Lindsay, St. Thomas's; M. J. McCormack, London; K. R. Masani, Univ. Coll.; K. M. A. Perry, Camb. and London; A. G. Potts, Guy's; J. D. Powell, Camb. and St. Bart.'s; W. L. Price, Birmingham; P. B. Rao, Madras and London; Winifred H. Redmond, King's Coll.; A. H. W. Roffey, King's Coll.; B. Samuel, Cardiff; H. S. Shoham, Univ. Coll.; G. S. Steele-Perkins, Camb. and Guy's; S. Sutton, Manchester; T. V. Tattersall, Camb. and Manchester; R. E. S. Turner, Oxford and St. Bart.'s; J. R. Vaid, Punjab and St. Bart.'s; S. P. Wanchoo, Middlesex; G. L. Ward, Camb. and St. George's; A. G. M. Weddell, St. Bart.'s; E. E. S. Wheatley, St. Thomas's; W. H. Whiles, King's Coll.; D. Whittaker, Camb. and St. Thomas's; I. Whittington, St. George's; and C. W. Wollaston, St. Thomas's.

Surgery.—P. H. Addison, St. Mary's; I. B. Asafu-Adjaye, Univ. Coll.; W. O. Baird, L.D.S. Eng., Middlesex; G. E. M. Benson, Oxford and St. Thomas's; M. J. Boering, London; A. R. Boney, St. Bart.'s; D. J. T. Brinkworth, Middlesex; Jean W. D. Calman, Univ. Coll.; H. R. Cara, Liverpool; B. S. Carter, St. Thomas's; A. J. P. Coetzee, L.M.S.S.A. Lond., London; M. M. Cohen, Manchester; D. D. Coleman, Charing Cross; Esther Copperman, Univ. Coll.; A. G. Cross, Camb. and St. Mary's; T. J. Davies, Cardiff and London; H. De, St. George's; C. B. Dharmasena, Ceylon and St. Bart.'s; A. G. Donald, Guy's; J. F. H. Eagles, Bristol; G. J. Evans, Guy's; J. C. G. Evans, St. Thomas's; L. H. Evelyn, Guy's; E. D. Falconer, Guy's; T. Fichardt, Guy's; N. W. Gardener, Guy's; P. H. R. Ghey, Camb. and St. Bart.'s; P. R. Goodfellow, Camb. and Manchester; P. P. Halemani, Bombay and Middlesex; J. L. Hamilton-Paterson, Univ. Coll.; G. L. Hardman, Camb. and St. George's; T. T. Hardy, Oxford and St. Thomas's; B. A. E. Harley, Middlesex; H. R. Hartnell, London; C. A. Hodges, St. Thomas's; W. H. Hughes, St. Mary's; H. V. D. Iles, Guy's; L. G. Irvine, Camb. and London; N. E. Jones, Cardiff; F. R. Kilpatrick, Guy's; A. H. Knowles, Camb. and St. Thomas's; S. B. Lavine, Middlesex; J. A. E. Lawn, St. Bart.'s; F. X. Letellier, Univ. Coll.; R. M. Littledale, Middlesex; A. E. Locke, Guy's; B. McArdle, Guy's; D. P. McCoy, Camb. and St. Bart.'s; J. O. McDonagh, Univ. Coll.; A. B. MacGregor, Camb. and St. Mary's; Rosamund M. L. Mackay, Univ. Coll.; J. P. Mackenzie, Univ. Coll.; J. D. P. Macpherson, St. Thomas's; C. R. Mayou, Birmingham; S. F. Mitchell, Univ. Coll.; M. P. Morel, Camb. and St. Bart.'s; G. R. Morgan, St. Bart.'s; H. J. V. Morton, Camb. and St. Thomas's; J. B. C. Murdoch, Camb. and Guy's; L. R. Norsworthy, St. Bart.'s; R. M. M. C. Orpwood, St. Bart.'s; J. P. O'Shea, Guy's; A. G. Palin, Oxford and St. Thomas's; P. S. Patuck, Univ. Coll.; B. J. Philbin, Manchester; G. Phipps, St. Thomas's; L. E. J. Poulier, Ceylon and St. George's; F. W. Roberts, Middlesex; J. R. Robertson, Oxford and St. Bart.'s; R. D. Roper, Camb. and St. Bart.'s; G. E. Scott, Oxford and St. Thomas's; G. H. Shaw, Camb. and St. Thomas's; B. W. Smith, Guy's; G. H. Stuart, Univ. Coll.; S. Sutton, Manchester; F. W. Thomas, Cardiff; W. E. Thomas, Cardiff; J. L. Treneman, Liverpool; G. L. Ward, Camb. and St. George's; C. J. T. Watson, Camb. and St. George's; J. Wilson, Camb. and St. Bart.'s; C. W. B. Woodham, St. Bart.'s; E. J. S. Woolley, St. George's; R. F. Woolmer, St. Thomas's; Freida Yarmalinsky, Univ. Coll.; and C. H. Yeoh, Oxford and St. Thomas's.

Midwifery.—G. Abbey, Leeds; J. S. Adamson, Bristol; G. G. Airey, St. Mary's; R. M. H. Anning, St. Mary's; J. E. M. Ayoub, Oxford and St. Thomas's; T. A. Baldwin, Univ. Coll.; G. A. Barker, King's Coll.; G. F. Barran, Camb. and St. George's; H. R. Bathurst-Norman, Oxford and St. Thomas's; A. A. W. Beach, L.D.S. Eng., Birmingham; N. B. Betts, Camb. and St. Thomas's; A. Birnbaum, London; M. J. Boering, London; R. Bolton, Univ. Coll.; F. J. Brice, London; R. E. Browne, King's Coll.; E. G. L. Bywaters, Middlesex; W. A. Cannell, L.D.S. Eng., Charing Cross; J. P. Child, Oxford and St. Thomas's; R. D. Clay, King's Coll.; M. M. Cohen, Manchester; J. H. Coles, King's Coll.; R. E. C. Copithorne, Middlesex; Esther Copperman, Univ. Coll.; L. Z. Cosin, Guy's; S. W. Croome, King's Coll.; H. T. Croudace, Guy's; E. M. Darmady, Camb. and St. Bart.'s; Hilda M. S. Davidson, King's Coll.; H. H. Davies, St. Bart.'s; T. J. Davies, Cardiff and London; W. A. Dawes, Camb. and St. Thomas's; C. E. M. De Gruchy, Guy's; W. J. B. De Gruchy, Camb. and St. Thomas's; C. B. Dharmasena, Ceylon and St. Bart.'s; M. E. Disney, London; R. J. Drummond, Guy's; Katharine E. M. Dunne, Camb. and Leeds; O. G. Edholm, St. George's; J. J. A. Embleton, St. Mary's; A. B. Evans, Camb. and Westminster; G. J. Evans, Guy's; S. T. Falla, London; R. G. Fear, St. Bart.'s; E. Fernandes, King's Coll.; H. C. Fletcher-Jones, Westminster; J. M. Flower, Westminster; J. F. Foulkes, Liverpool; D. L. Fromow, London; Violet Fry, Bristol; C. M. Fysh, St. Thomas's; M. K. Gadgil, Bombay; N. W. Gardener, Guy's; W. L. George, St. Mary's; A. B. F. Gibson, Camb. and St. Thomas's; M. S. Good, Oxford and St. George's; P. R. Goodfellow, Camb. and Manchester; G. B. Grayling, St. George's; T. F. Greenwood, Middlesex; T. F. R. Griffin, St. Mary's; P. P. Halemani, Bombay and Middlesex; C. V. Harries, L.D.S. Eng., Guy's; V. E. L. Hart, London; H. R. Hartnell, London; N. H. Harwood-Yarred, Camb. and St. Thomas's; S. A. Hasan, Punjab; A. J. Helfet, Liverpool; C. V. A. Henriques, King's Coll.; H. C. H. Higginson, St. Bart.'s; R. Hill, Camb. and London; Winifred M. Hill, Bristol; J. M. Holford, Camb. and St. George's; J. R. Hughes, Middlesex; M. I. A. Hunter, Camb. and St. George's; M. J. Ingram, Camb. and St. George's; L. G. Irvine, Camb. and London; E. R. James, St. Mary's; A. D. Jones, Bristol; A. E. Jones, Guy's; G. F. Jones, St. Mary's; S. O. Jones, King's Coll.; T. C. Keble, St. Mary's; A. Kekwick, Camb. and Middlesex; F. W. H. Kent, King's Coll.; G. E. Kerr, King's Coll.; R. L. Kerr, Camb. and St. Mary's; A. B. King, Univ. Coll.; B. H. Kirman, King's Coll.; Beatrice Lewis, Univ. Coll.; R. I. Lewis, Cardiff and London; M. J. Lindsey, Guy's; Louisa A. Loder, King's Coll.; K. Lumsden, Camb. and St. Bart.'s; W. S. McKenzie, Camb. and Middlesex; Catherine B. Mackinlay, King's Coll.; R. A. McMillan, Middlesex; T. C. Maling, Camb. and St. Thomas's; G. J. H. Maud, Camb. and Univ. Coll.; J. W. Maycock, Camb. and Middlesex; A. Miller, Camb. and St. George's; C. B. Miller, King's Coll.; P. J. W. Milligan, Oxford and St. Thomas's; N. H. M. R. Monro, Westminster; M. P. Morel, Camb. and St. Bart.'s; J. A. W. Musson, Middlesex; W. F. Nicholson, Camb. and Manchester; L. C. Oliver, Guy's; P. S. Patuck, Univ. Coll.; H. E. S. Pearson, St. Thomas's; R. C. Percival, London; K. M. A. Perry, Camb. and London; A. K. Price, St. Thomas's; W. L. Price, Birmingham; S. A. Propert, Camb. and St. Thomas's; R. Ram, Durham; J. Rosenbaum, St. Bart.'s; M. A. Rugg-Gunn, St. George's; R. T. Rushton, Leeds; H. P. Russell, Guy's; M. F. P. Ryan, King's Coll.; D. Saklatvala, Univ. Coll.; A. G. Salaman, Camb. and London; G. H. Saunders, Middlesex; P. R. Saville, London; G. R. Sedleigh-Denfield, St. Bart.'s; R. Shackman, St. Bart.'s; J. V. Shemilt, St. Thomas's; P. P. Sheth, Bombay and Middlesex; J. Shields, Camb. and St. Bart.'s; H. S. Shoham, Univ. Coll.; G. L. B. A. Silva, Middlesex; R. T. Simcox, St. Bart.'s; T. W. Smailes, Camb. and Leeds; E. J. Smith, King's Coll.; J. T. W. Spiridion-Kliszczewski, Camb. and Westminster; J. A. Squire, St. Bart.'s; L. J. Stoll, Guy's; V. A. J. Swain, St. Bart.'s; E. W. Taylor, Camb. and St. George's; B. A. Thomas, St. Bart.'s; R. C. P. Thomas, St. Mary's; G. E. H. Tisdall, Camb. and St. Thomas's; W. H. D. Trubshaw, St. Bart.'s; J. R. Vaid, St. Bart.'s; G. E. Walker, Camb. and Guy's; M. Walt, Guy's; T. P. Ward, Camb. and St. Thomas's; G. I. Watson, Camb. and St. Thomas's; P. J. Wenger-Byrne, Camb. and St. George's; F. E. Wheeler, St. Bart.'s; C. J. G. White, Camb. and Middlesex; M. R. P. Williams, Cardiff; J. C. Winteler, King's Coll.; Freida Yarmalinsky, Univ. Coll.; and E. C. Zorab, Guy's.

Pathology.—E. H. Allen, Camb. and St. George's; D. R. Ashton, St. Bart.'s; K. G. Awati, Bombay and Royal Free; J. S. Bailey, Camb. and St. Bart.'s; T. A. Baldwin, Univ. Coll.; G. A. Barker, King's Coll.; G. F. Barran, Camb. and St. George's; W. T. C. Berry, Camb. and St. Bart.'s; A. Birnbaum, London; Joan C. D. Bolt, Royal Free; R. Bolton, Univ. Coll.; W. A. Bowdler, St. Thomas's; W. D. Bower, Camb. and St. Thomas's; Muriel Boycott, Univ Coll.; F. J. Brice, London; Jean W. D. Calman, Univ. Coll.; W. R. Cambridge, Bristol; R. H. Carpenter, St. Bart.'s; H. F. Chard, St. Thomas's; A. H. Charles, Camb. and St. George's; H. O. Clayton, Manchester; D. M. Cooper, St. Thomas's; R. E. C. Copithorne, Middlesex; J. E. Davenport, Camb. and London; T. J. Davies, Cardiff and London; E. J. Dennison, St. Thomas's; D. P. Dewe, Bristol; P. E. Dipple, St. Bart.'s; M. E. Disney, and the fact that many cases treated by radiation continue to have progressive growth of distant metastases, does not prove that immunity to cancer cannot occur and that no practical value can result from a study of the subject. Actually we have no means of determining whether the numerous cases of advanced cancer cured by radiation, vide 10 years' statistics of such clinics as Radiumhemmet and the Fondation Curie, ever had distant metastases or not. We are not of Dr. Cramer's opinion that the subject of immunity to cancer is solved by negative observations, and we think future progress on this subject is closely linked up with experimental work upon tumours in animals such as the Jensen rat sarcoma, which not only shows at the present time most of the characteristics of a spontaneous new growth but also can be made to produce an effective and lasting immunity in the most sensitive stock.

We are, Sir, yours faithfully,
H. CHAMBERS,
G. M. SCOTT,
S. RUSS.

Barnato Joel Laboratories, Middlesex Hospital, W.,
Nov. 8th, 1932.

THE POLICY OF SCHOOL CLOSURE.—With reference to the letter with this title from Dr. W. Dunn, medical officer to Uppingham School, which appeared in THE LANCET last week, it has been pointed out to us that the official statement of the Ministry of Health on the subject in no way challenged or questioned the competence or authority of headmasters and school medical officers to make decisions as to the closure or non-closure of their own schools. An official account of the Broadstairs epidemic, of which Dr. Dunn required a report, appeared in the annual report of the chief medical officer of the Ministry of Health in 1926.

A STUDENTS' HOSTEL

TWO years ago an appeal was made for money to build a hostel for students of the London Hospital. It is strongly felt by the hospital staff that medical students ought to have the chance of enjoying "something comparable to the life of Oxford and Cambridge colleges," and the London has hitherto been able to offer hostel accommodation to a small number.

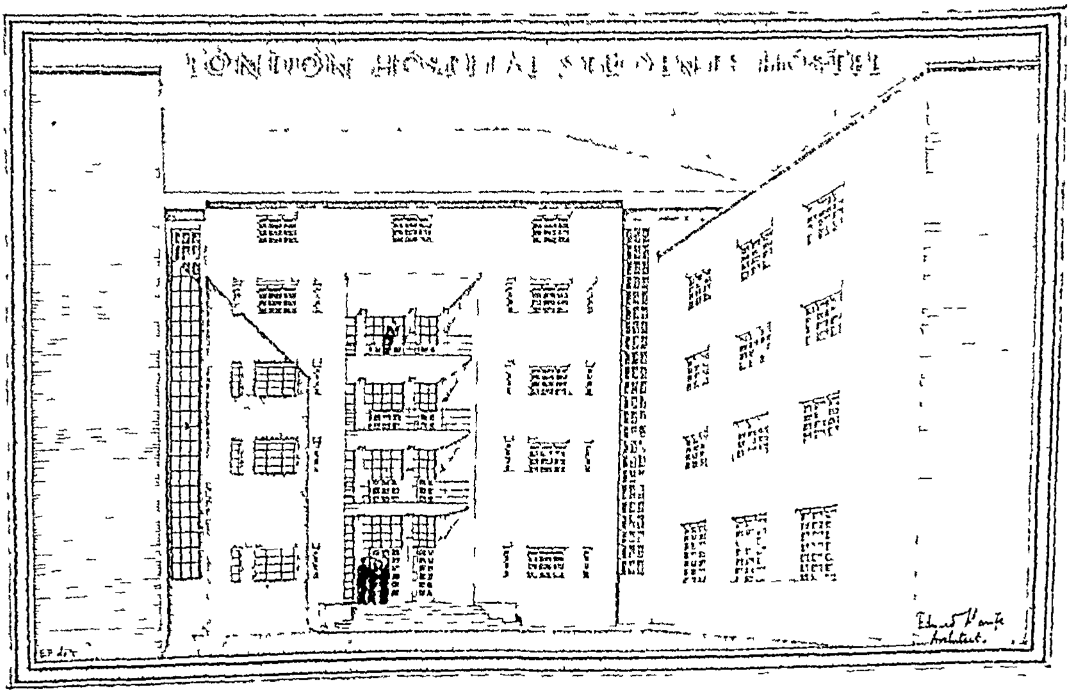
Since the first appeal was issued the sum of £10,000 in cash and promises has been raised. Of this, £4000 has been subscribed by members of the staff and other old London Hospital men; £2000 was obtained through an old London Hospital man in general practice, who was consulted about the disposal of a trust fund; £3000 has been voted towards the scheme by the house committee, from the Knutsford memorial fund; and £1000 has just been contributed by Sir Evan Spicer, a member of that committee. For the new building described below a total of £23,000 is required, without allowing for furniture or decorations; but it has been decided to proceed at once with the building of the north wing, which will contain the dining-hall, library, and kitchen, and a number of rooms for staff accommodation.

The site is an admirable one in Philpot-street, a wide street behind the hospital. The hostel itself has been planned on simple and straightforward lines. On the ground floor one enters into a hall with the common-room on one side and the dining-room on the other. Beyond the common-room there is the library in a quiet position for study, and beyond the dining-room is the servery and the kitchen offices. The hall itself gives direct access to a small garden facing east.

The staircases are on the two internal angles of the building, giving access to the 55 bed sitting-rooms for students. Care is being taken that these shall be simple, quiet, comfortable rooms. There is an ample supply of baths and lavatories on each floor. Special accommodation has been made for the warden and also for the matron. The kitchen and staff quarters are shut off by a door from the rest of the building on each floor. The plan has been so arranged that extensions in the future could be made with the least possible disturbance.

Externally the building will be in brick in harmony with its neighbours, but its design is particularly direct and modern in spirit, relying on good proportion, materials, and workmanship rather than ornament. The architect is Mr. Edward Maufe, F.R.I.B.A.

The hon. secretary of the hostel committee is Dr. A. E. Clark-Kennedy.



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THE POLICY OF Sgson, St. Bart.'s ; E. R. van Langenberg,
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LANCET last week, inteler, King's Coll. ; A. R. Woodforde,
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competence or autnew members of the Royal College
medical officers toLondon appearing in our last issue,
or non-closure ofg's degree should have been given as
account of the B

Dunn required a **Surgeons of Edinburgh**

report of the chiendidates, having passed the final dental
Health in 1926. e been granted the diploma of L.D.S.

, Frank Briggs, N. W. Nisbet, Frank
A STartin, T. R. Murphy, A. E. B. Noble, Anna
oggins, and C. R. H. Fenton.

of Physicians of Edinburgh

Two years agpeting of the College was held on Nov. 1st,
build a hostel fort Thin, the president, in the chair. Dr.
strongly felt by alker (Newtongrange) and Dr. Derrick
ought to have, (Edinburgh) were introduced and took
'ellows. Dr. Ion Simson Hall (Edinburgh)
Singh (Lahore) were elected to the Fellow-
l Pattison-Struthers bursary in anatomy
was awarded to Robert Oswald Walker.
Fleming was appointed Morison lecturer

culosis Council

ober meeting of the council, Dr. Brand said
mer post-graduate course, held in Hamburg,
Berlin, had been attended by 11 members. In
course lasting a week would be held at the
ospital, when attention would be directed to
ocedures in addition to artificial pneumothorax
. Some continental workers may attend this
R. R. Trail reported, on behalf of a committee
r. S. Vere Pearson, Dr. G. Jessel, Dr. Brand,
itherland, Dr. James Watt, Dr. C. O. Hawthorne
ter Edwards, that individual members had gone
iblished results of artificial pneumothorax treat-
found no basis for comparison of results. It
decided *to draw up criteria on* which to base a
urn in this country, and to ask all institutions to
ir results up to the end of 1932.

ty of Liverpool

Leyland Robinson, F.R.C.S., has been appointed
of obstetrics and gynæcology in the university,
sion to the late Prof. H. Leith Murray.
binson, who received his medical education at the
y of Liverpool and University College, London, has
been lecturer in *obstetrics* and gynæcology in the
y. He is honorary gynæcological surgeon to the Royal
Hospital, Liverpool, and honorary surgeon to the
for Women.
title of professor emeritus has been conferred upon
S. Macdonald, F.R.S., Holt professor of physiology
914 until this year.

University of London

Dr. A. M. H. Gray, dean of University College medical school, has been elected *dean of the medic* of the university for 1932–34. Mr. William M.D., has been elected dean of the faculty of musi

Sir Charles Sherrington will give the first of two on Reflex Action at University College, Gower-street, on Nov. 17th, at 5.30 P.M. The second lecture w take place on the 24th, as announced in our last issu, has been postponed until next term.

Mr. J. A. Hewitt, D.Sc., will give four lectures o Influence of Ductless Glands on Metabolism, at K College, Strand, W.C., at 5 P.M., on Thursdays from Nov. to Dec. 1st.

University of Bristol

A dissertation by Dr. Ronald Melville Norman has approved for the degree of M.D.

University of Durham

At the College of Medicine, Newcastle-upon-Tyne, Friday, Nov. 25th, at 4.45 P.M., Dr. E. D. Adrian, F.R Foulerton professor of the Royal Society, will deliver third of a series of lectures on Recent Advances in Physiolo Applicable to Medicine. His subject will be the *Senso Control of Respiration and of the Heart Beat. Medic practitioners are invited to attend.*

Fellowship of Medicine and Post-Graduate Medic Association

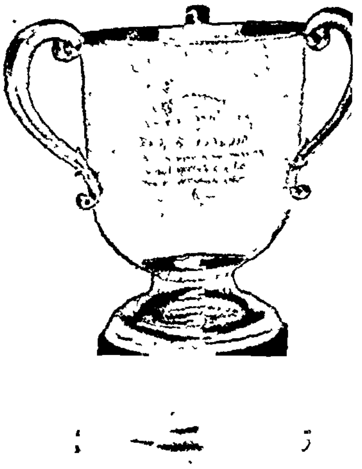
A course of six lecture-demonstrations on the Diagnos and Treatment of Chronic Rheumatism will be held at t *British Red Cross Clinic* for Rheumatism, Peto-plac *London*, N.W., from Nov. 22nd to Dec. 8th. on Tuesda and Thursdays at 8.30 P.M. Mr. R. Lindsay Rea will gi a demonstration on *the Fundus Oculi on Tuesday*, Nov. 22n at 8.30 P.M., at the in-patient department of the West-E Hospital for Nervous Diseases, Gloucester-gate, N. *There will be a course in proctology* at St. Mark's Hospit City-road, E.C., from Nov. 21st to 26th. There a vacancies *for two clinical assistants* each month (men on at the Lambeth Hospital, Brook-street, S.E. Furt details may be had from the secretary of the Fellows at 1, Wimpole-street, W.1.

Princess Elizabeth of York Hospital

With the sanction of the King the East London Hosp *for Children*, Shadwell, London, E., has changed its name *Princess Elizabeth of York Hospital* for Children.

Harveian Society of London

Last June the Harveian Society of London held th 101st annual banquet, which is now known as the Buckst Browne dinner, because of the kindness of Sir Geo Buckston Browne in providing the society with a sum money which enables the members *to dine together*. T president, Mr. Cecil P. G. Wakeley, reminded the memb and guests that *Sir Buckston* Browne had instituted the dinner in memory of his only son, Lieut.-Colonel George Buckston Browne, D.S.O., a very *gallant* officer who was killed in the war. Lord Riddell, who was the principal guest at *the banquet*, proposing the toast of the society in his ever happy manner, said that he was moved by the generosity of Sir Buckston to present the society with a *loving cup to be* used at the annual Buckston Browne dinner. This cup has now been received by the society. *It consists* of a cup of plain George III. form, with flanched rim and three scroll handles, with leaf terminations, 13 in. high, gilt and standing on *a plinth* of art green wood. On one side of the cup is an engraved portrait of Harvey, while on the *other* side the names of the donor, the president, Mr. Wakeley, and the treasurer, Dr. Godfrey de Bec Turtle, are engraved. The cup was made, and the engraving executed by Messrs. J. W. Benson, Ltd., Ludgate-hill, E.C.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removal shall not take effect, unless the insured person in the meantime applies to and is accepted by another practitioner, until fourteen days after the date on which the practitioner notifies the committee that the insured person is fit to resume work; but this paragraph shall not apply in any case in which, owing to the chronic nature of the insured person's illness, medical certificates are, under the terms of the medical certification rules, being given at less frequent intervals than one week.

This clause is put in to protect insured persons being unloaded on the service during an acute illness. It will be seen that (subject to no acceptance by another doctor) the delay in removal is conditional on the patient being (1) in receipt of treatment, (2) incapable of work; but a chronic case, as defined in the clause, is an exception to the rule. The certificate in question is the pink form 40 B, containing the phrase "Your incapacity is of such a character that it will be unnecessary to see you for the purpose of treatment more frequently than once in . . . weeks." (The blank period may not be more than four.) This procedure would appear to be fair to all parties in the case of chronic invalids who are receiving such certificates, but there are a number of old and infirm insured persons who by reason of being over 65 do not receive any certificates at all, and from the above it would appear to be impossible for the insurance doctor who may be attending such a really chronic case ever to be able to get that case removed from his list under the clause mentioned above, as if he gets no certificates he cannot be said to be receiving certificates "at less frequent intervals than one week."

Lost Cheques

It occasionally happens that an insurance practitioner does not receive the cheque issued to him quarterly by the insurance committee. It may be lost in the post, lost in the doctor's house, lost in the committee's office. When he applies for the issue of another cheque the usual procedure is for the committee to require him to sign a form which guarantees the committee against loss through the issue of a second cheque. The signing of an indemnity form might be fair if the practitioner admits he has had the cheque and lost it, but not when it is denied that he has never received it. This matter was discussed at the last meeting of the London panel committee when it was decided to ask the Insurance Acts committee to take the matter up with the Ministry.

A Correction

Last week it was stated that the conference of the National Association of Insurance Committees passed a resolution to suggest the alteration of Clause 7 III. from a period of one month to that of three months. This was the original proposition, but an amendment by London was carried, under which the alteration suggested was six weeks and not three months.

PUBLIC HEALTH SERVICES

Typhoid in Yorkshire

LAST week we gave some account of two epidemics of typhoid in Yorkshire—one in the West Riding, near Huddersfield, the other in the North Riding, at and around Malton—and were enabled by the courtesy of the medical officer of health to set out in the former case how the infection arose. Dr. L. C. Walker, medical officer of health (urban and rural) for Malton, has sent us similar details for his own area. "The various medical practitioners in the town," he writes, "realised towards the end of the week ending Oct. 22nd that there were several probable cases of typhoid, but it was not until the 22nd that the first case of typhoid was notified. Another case was notified on the 23rd and 15 cases on the 24th. On Sunday, the 23rd, when it was evident that there was a possibility of a sudden epidemic arising, I began to take the necessary precautions. I arranged for the bellman to go round the town on the Monday morning, warning people that both water and milk should be boiled, and notices to the same effect were distributed to every house in the town twice on that day. I had already taken a sample of water from our town supply on the 23rd for bacteriological examination, and on the Monday my sanitary inspector went into the question whether any connexion could be made out between the milk-supply of the town and the epidemic. As there were so many different milk retailers and no general wholesalers this was at once, and easily, ruled out. The explosive character of the epidemic, however, made us suspect that the cause could be nothing but the water-supply.

"The water-supply of Malton is actually taken from a well on the lower oolite practically at river level, and from this well pumped up to a reservoir on the higher part of the town. Malton is situated on the southern spurs of the Castle Howard Hills, on limestone. This overlies a bed of clay, and the springs come out between the two. Quite near the river and owing to the clay the tendency is for this water to drain down towards our well rather than into the river. During pumping hours the supply goes direct to the houses, and when pumping is not being carried on the supply is carried from the reservoir. As there was no definite source of pollution in the neighbourhood of the well we had to look for a possible source elsewhere. There had been no flooding for some time, so there was no question of pollution from this source. The nearest known possible source of pollution was a case of typhoid at the poor-law institution, a distance of about 200 yards from the well and somewhat above it. This case of typhoid had entered the institution on Sept. 21st, and from about the 24th or 25th had been treated as a typhoid under the head charge nurse.

"We therefore attempted to find some connexion between this case and our well, and thought at first that there might be a possibility of a direct leak into our main, if cracked, from the drains of the workhouse. At one place they were quite near together, but on excavating we found that there was no sign of leakage. We then tested by water the next part of the drain, and found it impossible to fill this length of the drain, which measured only some 20 yards from one inspection chamber to the next; although we had five taps pouring water into the drain for about an hour and a half it was impossible to fill this section; in fact, after removing the plugs it was still almost empty. We continued excavation of the drain and eventually found that at one place, where work had been done about 18 months ago on some electric cables, two holes had been made in the drain by a workman's pick, and the water teemed out of these holes as fast as we put it in. This was the last occasion on which the ground had been opened in the region of this drain. Below the holes were appreciable cavities where the soil had been washed away, and the water from our taps disappeared through these cavities as fast as we put it into the drain. This

PANEL AND CONTRACT PRACTICE

Scope of Treatment under the Act

THE terms of service provide that the medical treatment which an insurance practitioner is required to give to an insured person shall include :—

> "All proper and necessary medical services other than those involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess."

The insured person is therefore not entitled to a medical service which involves the application of special skill and experience, and the doctor giving such a service is entitled to charge the insured person for such service, providing he can satisfy both the local medical committee and the insurance committee for the area that the service did involve the application of special skill and experience and that he was qualified to give it. It is noteworthy that both special skill and experience are required; it would not be enough to have special skill alone, the practitioner must have experience. The dictionary defines skill as "familiar knowledge of any art united with dexterity in the practice of it," and dexterity as "a ready expertness due to practice in the employment of mechanical or mental resources"; experience is "the ascertained result of a series of trials or experiments." The practitioner who claims to be making a service which is outside the Act must accordingly have familiar knowledge of the service, combined with a ready expertness due to practice in the employment of mechanical or mental resources for this service, and he must know the result of a series of similar trials of it.

MANUAL AND MENTAL DEXTERITY

Anyone who glances through a list of services for which fees have been claimed (on form G.P.45), on the ground they are outside the Act, is likely to be impressed by the number of cases in which fees are allowed where the employment of mechanical rather than mental resources would appear to be the deciding factor in admitting the claim. The enucleation of tonsils, for example, does not require much mental dexterity, but an appreciable amount of manual dexterity. The same would probably hold true for an appendicectomy. Again, another deciding factor for the allowance of fees under G.P.45 might be the provision of expensive apparatus. It would clearly be impossible to demand that every insurance doctor should be possessed of a modern X ray or diathermy plant, or even of an artificial sunlight lamp; a certain amount of manual dexterity is required in using all these pieces of apparatus, but the skill lies largely in the interpretation of results. Claims for fees for such medical services are, as a rule, allowed, because if it were held that the service was within the Act it would follow that any insured person would be able to demand X ray examination as a right from any insurance doctor. On the other hand, no claim for fees has ever been allowed for the service of making a diagnosis, although it may require a special knowledge of a high order combined with a ready expertness in the employment of mechanical and (notably) mental resources. The physician who decides the cause of some localised paralysis and deduces therefrom the appropriate treatment would not have his claims admitted if he filled in G.P.45 for such service. All insurance doctors, being qualified medical men, are however expected to be able to make a diagnosis, no matter how difficult this may be. Hence no special fees are allowed. The physician who diagnoses diabetes would not be allowed fees for the diagnosis nor for the treatment by diet or insulin; but if he estimates the patient's blood-sugar his claim will be allowed because this estimation demands manual and mental dexterity beyond what a practitioner might reasonably be expected to possess. Moreover, in every case where claims under G.P.45 arise it is the practitioner's duty to give the patient the opportunity of getting the special service done for nothing at a hospital.

THE CASE OF PSYCHOTHERAPY

Let us now consider how these arguments apply to psychotherapy, a subject which was discussed again at the last meeting of the London insurance committee. Is psychotherapy a special medical service? First of all, is there any hospital to which a case thought to be needing psychotherapy can be sent, as an out-patient, for treatment? There are certainly not many such hospitals in this country, so that the opportunity to get the service gratuitously will in most cases not be available. Secondly, it is quite certain there is no manual dexterity in this service. There may be some degree of mental dexterity required, but is this of a higher order than that required to make a diagnosis in some forms of nervous disease and for which, as we have seen, no fees would be payable. Does not the treatment given in psychotherapy depend largely on the diagnosis?—for which no doctor is paid by G.P.45. Having arrived at the diagnosis, is the consequent treatment beyond ordinary general practitioner skill? Discussion of the question whether psychotherapy comes under G.P.45 will be resumed at the next meeting of the London insurance committee, and if this committee still decides to differ from the local medical committee, the Ministry will have to place the matter before a court of referees. This would mean expense, but the matter is also expensive to the insured person, who, by the very nature of his trouble, is much under the doctor's influence, and however unable to afford private fees would hardly dare to refuse to pay because of the hope of improvement held out to him by this form of treatment. While the position is one fraught with danger of abuse, it is quite possible for those who are experts in this specialty to give their insured patients such treatment without special fees. It would, of course, be far better if the two committees could agree about the position.

Removal from your List

A rather interesting point arose recently in a medical service case. The regulations provide that an insured person can be removed from an insurance practitioner's list in three ways: by action of the insured person; by action of the insurance committee; or by the insurance practitioner. It was on this last method of procedure that discussion arose. The terms of service provide that a doctor can give notice to his insurance committee at any time to have a person's name removed from his list, but this is subject to certain restrictions as will be seen in the following clause:

> If a practitioner has given notice to the committee of his desire to have an insured person removed from his list and the insured person is, at the date when the removal would take effect, incapable of work, and is receiving treatment from the practitioner, the practitioner shall notify the committee of the insured person's incapacity, and the

something to allay the suspicion that information is being deliberately withheld?

Sir ARTHUR MICHAEL SAMUEL: Is not information obtainable from nickel works in other countries through the International Labour Office?

Sir J. GILMOUR: I do not think that there is anything by which we can directly associate this disease with the processes concerned so far as our present knowledge goes. The examinations which are going to be undertaken may help us to come to some conclusion.

Mr. GRENFELL: Is it not known that cancer is more or less connected with mineral oils such as are used in this process, and is it not important that that should be considered?

Sir J. GILMOUR: All I can say is that those concerned, both in the firm and in my office, are taking every opportunity to study this problem, and the medical officer connected with the firm has gone through a special course quite recently to bring himself up to date with the latest information on this subject.

Relief of Unemployed Persons

Mr. KIRKWOOD asked the Minister of Health whether in view of the poverty that had existed all the summer and the suffering which the approach of winter would cause to the unemployed who had been unable to buy new clothes, bedding, and furniture for years, he would state what arrangements the Government were making to prevent further suffering.—Sir E. HILTON YOUNG replied: The responsibility for providing food, clothing, and shelter for those who are in need, whether on account of unemployment or not, rests with the public assistance authorities. As regards England and Wales, I am watching the situation closely and I am satisfied that the resources of the authorities will be equal to any additional strain which may be placed upon them.

British Meat for Mental Institutions

Sir PERCY HURD asked the Minister of Health whether he was aware that the Cheshire county council had arranged that the meat for the mental institutions under their control should be British and be bought wholesale at the markets and slaughtered by their own officials, the average cost over the 12 months being 4¾*d.* per lb.: and whether he would make this fact known to other local authorities for the encouragement of British agriculture.—Sir E. HILTON YOUNG replied: I am informed that a considerable part of the meat purchased for these institutions is British, and that the average cost for the last 12 months is about 5¼*d.* per lb. I will communicate with my hon. friend with regard to the details and also as to the suggestion contained in the second part of the question.

Slum Clearance and Re-housing

Mr. DENMAN asked the Minister of Health to what extent local authorities in general were carrying out the five-year plans of slum clearance and re-housing submitted to him under the Housing Act, 1930; how many areas were at present in process of being cleared; and how many dwellings were being built for re-housing the persons displaced.

Sir E. HILTON YOUNG replied: I have received resolutions declaring 541 areas in England and Wales, the clearance of which involves the displacement and re-housing of approximately 78.150 persons, to be clearance areas under the Housing Act, 1930. Information as to the number of areas at present in process of being cleared is not available; but 229 clearance or compulsory purchase orders have been confirmed in connexion with such areas. Upwards of 16.000 houses, which are either earmarked or available or the purposes of the Act, have either been erected or are under construction.

Mr. DENMAN: Does the right hon. gentleman think the time has come for speeding up the process of slum clearance and re-housing?

Sir E. HILTON YOUNG: I can assure the hon. Member that there will be no relaxation of effort. At the same time I would point out that, allowing for the necessary difficulties of starting this work, the progress cannot be looked upon as unsatisfactory.

Sir P. HARRIS: Can we be assured that the Ministry of Health are not holding up any of these schemes on the ground of economy?

No further answer was given.

Accidents to Children in London Streets

Mr. RHYS DAVIES asked the Home Secretary the number of street accidents in London during the last 12 months in which children under 5 years of age were involved; and whether it would be possible to obtain similar information with respect to street accidents over the whole country.—Sir J. GILMOUR replied: There were 51 fatalities in street accidents among children under 5 in the metropolitan police district and City of London during the year ended Sept. 30th last. I regret that figures for non-fatal accidents to children under 5, and for fatal or non-fatal accidents to such children for the country as a whole, could not be obtained without incurring considerable expense.

Payment of Income-tax

Mr. HALL-CAINE asked the Chancellor of the Exchequer whether, in view of the improved financial situation, he would consider the advisability of abolishing the existing provision under which 75 per cent. of income-tax payable in respect of the current financial year should be paid on Jan. 1st next and providing for the payment of one-half such amount in lieu thereof, with a view to alleviating as far as possible the burden upon industry and the tendency to create further unemployment that would result from the obligation to pay so large a proportion of the tax at this date.—Mr. CHAMBERLAIN replied: I regret that I could not possibly entertain any suggestion for an alteration of the law governing the collection of the income-tax for the current year. I am afraid that my hon. friend is under a grave misapprehension if he thinks that the present state of the national finances would permit of any relaxation in the collection of the income-tax.

Repairs to a Doctor's Telephone

Mr. PERKINS asked the Postmaster-General whether he was aware that a prominent London doctor working at Westminster Hospital had his telephone (Egham 314) cut off for Oct. 22nd, 23rd, and 24th, and why no attempt was made to repair this telephone until Oct. 25th.—Sir KINGSLEY WOOD replied: I regret to find that by an oversight, of which proper notice will be taken, the circuit Egham 314 was not included in the list of lines scheduled for emergency attention to faults. A considerable number of faults developed in the Egham area during the week-end Oct. 22nd to 24th, owing to abnormal weather conditions, and there was unfortunately some delay in restoring service on circuit Egham 314. The work of repair was, in fact, begun on the 24th. The circuit has now been included in the emergency list.

TUESDAY, NOV. 8TH

Condemned Houses in Edinburgh

Mr. GUY asked the Secretary for Scotland the number of houses in Edinburgh which had been condemned as unfit for habitation and which were still occupied.—Mr. SKELTON replied: The total number of houses in Edinburgh which have been condemned as unfit for human habitation and which are still occupied is 1009.

Safety of Life at Sea

Sir BASIL PETO asked the President of the Board of Trade whether all the five principal maritime powers had ratified the Safety of Life at Sea Convention; and whether, if they had not done so before the end of December, he intended to put the reversal of helm orders in force in the British merchant service on Jan. 1st.—Mr. RUNCIMAN replied: The following countries have ratified and will bring the International Safety of Life at Sea Convention into operation on Jan. 1st, 1933:—United Kingdom, Canada, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Spain, and Sweden. Steps are being taken to bring the provisions of the Merchant Shipping (Safety and Load Line Convention) Act, 1932, including those relating to Helm Orders, into operation on that date.

Births, Marriages, and Deaths

MARRIAGES

SCOTT TAGGART—BAYSTON.—On Nov. 9th, 1932, at the Parish Church, Cheltenham, Norman, elder son of Dr. and Mrs. J. Scott Taggart, of Peel Moat, Heaton Moor, to Gwendoline, only daughter of Mr. and Mrs. Arthur Bayston, of Cranley Lodge, Cheltenham.

SHAWCROSS—CARTWRIGHT.—On Nov. 2nd, at St. Paul's, Herne Hill, Ellis W. H. Shawcross, M.A., M.R.C.S., of Beckenham, to Gladys L. (Jill), daughter of Mr. and Mrs. Alfred Cartwright, of Herne-hill.

DEATHS

BROWNLOW.—On Nov. 5th, Harry Lurgan Brownlow, F.R.C.S., aged 64.

CROSS.—On Nov. 7th, after a long illness, at Shackleford House, Petersfield, Dr. Robert George Cross, in his 70th year.

HILL.—On Nov. 5th, A. Bostock Hill, M.D., D.P.H., aged 78.

LEDIARD.—On Oct. 31st., at Carlisle, Henry Ambrose Lediard, M.D. Edin., F.R.C.S Eng., J.P., aged 84 years.

POWELL.—On Nov. 1st, suddenly, at Bilton, Herbert Edward Powell, M.R.C.S., L.R.C.P.

WRIGHT.—On Nov. 2nd, at his residence, Hillside, Abinger Common, and late of Eye, Suffolk, Lieut.-Colonel C. F. Wright, J.P., T.D., M.R.C.P., L.S.A., aged 71 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

seemed to establish a definite connexion between the cases of typhoid and the well.

"When it was realised on the morning of the 24th that we should probably have a large number of cases, I decided, if possible, to take over the Malton Hospital, a new and up-to-date building, eminently satisfactory for the purposes of an isolation hospital. By sending several cases home and removing those still requiring surgical attention to York County Hospital, it was possible to empty it so that we could take it over as an isolation hospital. By the evening of the 24th we had cleared the hospital and already taken in 8 cases. With 15 cases on the 24th, 10 on the 25th, and the balance made up on the 26th, we had soon filled our total of 38 beds.

"As cases were still crowding in I had to look round for further help, and already having arrangements with York for treating our fever cases, I was enabled to get several beds there. The East Riding county council, through Dr. R. L. Thornley, and later Scarborough isolation hospital, through Dr. S. F. Linton, very kindly came to our rescue and have also taken cases in. At the present moment we are also filling up Leeds. So far we have 168 cases in these various hospitals, and 6 deaths have occurred. There are, in addition, as far as I have been able to find out, about 15 contact cases—people working in Malton or children coming to school in Malton—in various parts of the surrounding country."

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 29TH, 1932

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 34 (last week 33) ; scarlet fever, 2281 ; diphtheria, 986 ; enteric fever, 138 (last week 83) ; acute pneumonia (primary or influenzal), 838 ; puerperal fever, 31 ; puerperal pyrexia, 109 ; cerebro-spinal fever, 22 ; acute poliomyelitis, 43 ; acute polio-encephalitis, 5 ; encephalitis lethargica, 12 ; continued fever, 1 (Earsdon U.D., Northumberland) ; dysentery, 4 ; ophthalmia neonatorum, 87. No case of cholera, plague, or typhus fever was notified during the week.

Of the cases of small-pox, 27 (i.e., all except 7) were returned from the county of London, distributed thus among the metropolitan boroughs: Bethnal Green and Stepney each 1, Hackney 3, Lambeth 6, Islington 7, Poplar 9.

Of the cases of enteric fever, 80 were reported from the North Riding of Yorkshire (Malton 78, Scarborough 1, Helmsley R.D. 1), and 19 from the West Riding, 8 of which occurred in the urban district of Denby and Cumberworth.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 1st–2nd was as follows:—Small-pox, 64 under treatment, 4 under observation (last week 65 and 4 respectively) ; scarlet fever, 2066 ; diphtheria, 1745 ; enteric fever, 20 ; measles, 222 ; whooping-cough, 348 ; puerperal fever, 21 (plus 8 babies) ; encephalitis lethargica, 231 ; *poliomyelitis, 6 ; "other diseases,"* 162. At St. Margaret's Hospital there were 18 babies (plus 8 Mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox or enteric fever, 7 (1) from measles, 10 (1) from scarlet fever, 14 (1) from whooping-cough, 30 (5) from diphtheria, 61 (19) from diarrhœa and enteritis under two years, and 42 (6) from influenza. The figures in parentheses are those for London itself.

Three deaths from diphtheria occurred at Manchester and at Stockport. Birmingham reported 5 fatal cases of influenza, Manchester 3.

The number of stillbirths notified during the week was 266 (corresponding to a rate of 43 per 1000 total births), including 42 in London.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Mental Treatment Act, 1930

IN the House of Commons on Nov. 2nd Sir E. HILTON YOUNG, Minister of Health, moved that the following rules, dated July 28th, 1932, made by the Board of Control with the approval of the Lord Chancellor under Subsection (1) of Section 338 of the Lunacy Act, 1890, as extended by Subsection (2) of Section 21 of the Mental Treatment Act, 1930, which were presented on Oct. 18th, be approved, namely: The Mental Treatment (Lancashire Mental Hospital Board) Rules, 1932. S.R.O., 1932, No. 666 ; the Mental Treatment (Staffordshire Mental Hospitals Board) Rules, 1932. S.R.O., 1932, No. 667 ; The Mental Treatment (West Riding of Yorkshire Mental Hospital Board) Rules 1932. S.R.O., 1932, No. 668.

The motion was agreed to.

Edinburgh Materity Hospital

The Edinburgh Royal Maternity and Simpson Memorial Hospital Order Confirmation Bill (which has already passed through the House of Lords) was read the third time in the House of Commons on Nov.7th.

HOUSE OF COMMONS

WEDNESDAY, NOV. 2ND

The Spahlinger Vaccine

Mr. GROVES asked the Minister of Agriculture whether he had received any reports regarding the testing of the Spahlinger vaccine on cattle in this country ; and whether any conclusions had been reached regarding that vaccine as a preventive of tuberculosis.—Major ELLIOT replied: I have seen the report of the trial of Mr. Spahlinger's vaccine which was carried out in 1929–30. After his public announcement at the beginning of this year as to the method of preparation of his vaccine, Mr. Spahlinger was invited *and agreed to supply vaccine for independent* test in this country. Arrangements are now in progress for the test concerning which the Ministry is in communication with Mr. Spahlinger ; and it will be undertaken as soon as the vaccine arrives.

THURSDAY, NOV. 3RD

Cancer among Nickel Workers

Mr. DAVID GRENFELL asked the Home Secretary if he would give the House the results of his investigations into the incidence of cancer among men who had been employed at the Mond nickel works ; and whether he was now in a position to recommend precautionary measures for the protection of the men engaged in the processes where previous cases had occurred.—Sir JOHN GILMOUR replied: I am advised that the investigations made earlier in the year, which included a special inquiry by a pathologist, did not establish that the cases of cancer among these men were of industrial origin ; and no substance known to give rise to cancer appeared to be in use at the works. It was proposed that the next step should be an expert examination of a number of the employees, but it was found necessary to postpone this owing to the closing of the works four months ago. I understand that work may be restarted shortly and that it is intended to commence these examinations as soon as practicable, and if the results should indicate that any particular precautions would be of value, the question of putting them into operation would be immediately followed up.

Mr. GRENFELL: Would the Home Secretary not consider the advisability of setting up a Departmental Committee of a similar kind to that which reported last year upon mule-spinners' cancer in view of the evidence already in possession of the local people?

Sir J. GILMOUR: I think that by far the best way is that the examination which has been promised should be undertaken by experts who are more likely to get practical results than any committee.

Mr. GRENFELL: Is the Home Secretary not prepared to give some consideration to the local demand and to do at Cheltenham College and Edinburgh University, qualifying in 1870, when he was chosen house surgeon to James Spence at the old Royal Infirmary. He became an ardent admirer of Syme, learned the new antiseptic technique by watching Lister dressing his cases on Sunday afternoons, and saw Simpson administer chloroform drop by drop on a towel. After leaving Edinburgh, Lediard went to Manchester as house surgeon at the infirmary and then to the Central London Sick Asylum, attending clinical practice at several general hospitals. He took the M.D. Edin. in 1875, and the F.R.C.S. Eng. in 1876.

Through the good offices of Matthews Duncan he then joined Mr. W. B. Page and Dr. J. A. Macdougall in partnership at Carlisle. In 1880 Lediard was appointed assistant surgeon to the Cumberland Infirmary, which he served for 50 years until his resignation in 1930, when he was appointed consulting surgeon and vice-president. During these years his papers on medical, surgical, and ophthalmological subjects were to be counted by scores. Among the more notable of them was an account of a successful case of excision of popliteal aneurysm, in which he observed that excision of part of the popliteal vein did not prevent the good result. He also recorded a successful case of excision of a subclavian aneurysm by Allingham's method. Lediard had a large experience of goitre and of urinary calculus in a district where these diseases were common. As a general surgeon he was held in high esteem by all classes in Cumberland and the border counties. He may truly be said to have introduced the benefits of modern operative surgery to this district, and till late in life he kept in touch with surgical development. It was through him that an X ray apparatus was installed at the infirmary in 1897. During the war he was made a justice of the peace for Carlisle.

Lediard was a widely read man, actively interested in the promotion of the Carlisle Literary Society and the establishment of Tullie House as a centre of the intellectual activities of the city. A man of strong character and independent mind, readily moved by the thought of injustice, he risked on more than one occasion the good opinion of his friends and colleagues in order to fight for what he considered just. In this way, early in his career, he was successful in obtaining the reprieve and ultimate pardon of a man condemned to death for the murder of a country woman near Carlisle. His private kindnesses and benevolences were many, and his high ideal of personal and professional conduct infected those who worked with him. He was a great lover of animals, especially of horses, and to the last drove through the streets of Carlisle in a victoria drawn by thoroughbreds.

Dr. Lediard leaves a widow and a daughter; his elder daughter died while serving as a V.A.D.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 15th.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8 P.M., PATHOLOGY. Laboratory Meeting at St. Mary's Hospital, London, W. Demonstrations: Sir Almroth Wright: 1. Spontaneous Phagocytosis. 2. Method of Encapsulating Blood. 3. Technique of Measuring Bactericidal Power of Whole Blood. Dr. E. A. Butterworth: 4. Para-influenza Bacilli in the Mouth. Dr. A. H. Thompson: 5. Method of Obtaining Enterococcus in Pure Culture from Fæces, &c. Dr. V. D. Allison: 6. A Simple Method of Obtaining Pure Primary Cultures of Ringworm. Dr. I. H. Maclean: 7. Results of Implantation of Human Carious Teeth in a Dog's Mouth. Dr. A. Fleming: 8. Some Convenient Class Methods. 9. Capsules of *B. influenzæ*. Dr. W. D. Newcomb: 10. Pathological Specimens.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Cases will be shown.

FRIDAY.—5.30 P.M., PHYSICAL MEDICINE. Paper: Dr. C. W. Buckley: The Differential Diagnosis of Spondylitis and its Treatment by Physical Methods. A discussion will follow. RADIOLOGY. Members of this Section are specially invited to attend the Meeting. 8.15 P.M., OBSTETRICS AND GYNÆCOLOGY. Prof. Herbert Spencer: Two Cases of Cancer of the Body of the Uterus, with Metastases in the Vagina and Vulva, treated by Hysterectomy and Radiation and free from Recurrence after Ten and Thirteen Years. Paper: Mr. Eardley Holland: On the Termination of Early Pregnancy by Abdominal Hysterotomy. Mr. J. P. Hedley: An X Ray of an Occipito-posterior Position. 8.30 P.M., RADIOLOGY. Short reports of cases will be given.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street; Cavendish-square, W.

MONDAY, Nov. 14th.—8 P.M., Clinical Evening.

HUNTERIAN SOCIETY.

MONDAY, Nov. 21st.—9 P.M. (at the Apothecaries Hall, Water-lane, E.C.), Discussion on the Influence of Faith on Disease, when the Rev. Father Woodlock, Dr. Robert Hutchison, and Dr. William Brown have promised to speak.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, W.C.

FRIDAY, Nov. 18th.—5 P.M., Dr. A. S. M. Macgregor: Epidemiological Features of the Pneumococcus and its Types.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THURSDAY, Nov. 17th.—8.15 P.M. (at the Hospital for Tropical Diseases, Endsleigh-gardens, Gordon-street, W.C.), Clinical Meeting.

BIOCHEMICAL SOCIETY.

FRIDAY, Nov. 18th.—4.30 P.M. (at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C.), Communications.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Nov. 15th.—7.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.), Dinner followed by discussion on Non-specific Protein Therapy, to be opened by Dr. E. W. Bray.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's-inn Fields, W.C.

TUESDAY, Nov. 15th.—5 P.M., Mr. Francis Weston: The London Guild of Barbers (formerly Barbers Chirurgeons) and Thomas Vicary, Serjeant Surgeon to Henry VIII, as Master thereof. (Vicary Lecture.)

UNIVERSITY COLLEGE, Gower-street, W.C.

THURSDAY, Nov. 17th.—5.30 P.M., Sir Charles Sherrington: Reflex Action.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, Nov. 14th, to SATURDAY, Nov. 19th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Tues., 4 P.M., lecture by Mr. J. Alban Andrews: Renal Tuberculosis. (Free to Members.)—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. A course in Neurology, daily at 5 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. A course in Medicine, Surgery, and Gynæcology. Afternoons and some mornings.—HOSPITAL FOR CONSUMPTION, Brompton, S.W. A Course in Practical Pathology dealing with Laboratory Methods and the Interpretation of Results. Thurs., 11.45 P.M.—LAMBETH HOSPITAL, Brook-street, S.E. Demonstration of Selected Cases of General Interest by Dr. G. F. Stebbing, assisted by the staff of the hospital. Fri., 2 P.M.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Course in Venereal Diseases. Afternoons and evenings.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. All day course in Diseases of the Chest

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Nov. 14th.—10 A.M., Genito-urinary Operations, Skin Department. 11 A.M., Surgical Wards. 2 P.M., Eye and Gynæcological Out-patients. 4.15 P.M., Lecture, Mr. Simmonds: Surgery of the Thyroid.

TUESDAY.—10 A.M., Medical Wards. 11.15 A.M., Surgical Demonstration. 2 P.M., Throat, Nose, and Ear Out-patients.

WEDNESDAY.—10 A.M., Medical Wards, Children's Medical Out-patients. 2 P.M., Eye Department. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M., Neurological Out-patients. 11.30 A.M., Demonstration of Fractures. 2 P.M., Eye and Genito-urinary Out-patients.

FRIDAY.—10 A.M., Skin Out-patients. 2 P.M., Throat, Nose, and Ear Out-patients. 4.15 P.M., Lecture, Mr. Roche: Demonstration of Urological Specimens.

DAILY.—At 2 P.M., Operations, Medical and Surgical Out-patients. The lectures at 4.15 P.M. are open to all Medical Practitioners without fee.

OBITUARY

ALFRED BOSTOCK HILL, M.D., D.P.H.

EMERITUS PROFESSOR OF HYGIENE IN THE UNIVERSITY OF BIRMINGHAM

WE regret to announce the death of Prof. Bostock Hill, a leading authority on public health, which occurred at Weybridge on Saturday last, Nov. 5th.

Alfred Bostock Hill was born in 1854. His father Dr. Alfred Hill, the first medical officer of health for the City of Birmingham, was appointed in 1872 after the passing of the Public Health Act of that year, and when he died in 1922 at the advanced age of 95, his two sons, the subject of this memoir and the late Sir Eustace Hill, were both county medical officers of health. Bostock Hill received his general education at King Edward's School, Birmingham, and continued his medical education partly in that city at Queen's College—then the Birmingham medical school with a Royal charter—and partly in Edinburgh, where he qualified in 1876 as L.R.C.P. Edin. and L.M., taking also the L.S.A. diploma. He later obtained a medical degree at Giessen, and made an early start in his career as a sanitarian with the appointment of public analyst to the county of Warwick. In 1879 he became professor of chemistry in Queen's College, took the D.P.H. Camb. in 1881, and shortly afterwards was appointed to the post of professor of hygiene in Mason's College, Birmingham, of which institution Queen's College had now become the medical faculty. On the erection of Mason's College into the University of Birmingham in 1900, Bostock Hill became professor of hygiene and public health in the university, receiving the degree of M.Sc. Birm.

PROF. BOSTOCK HILL

[*Photograph by Elliott and Fry*

The whole of Bostock Hill's life was spent in administering, under different authorities, the regulations for the maintenance of public health. His various appointments make up a lengthy list and he discharged the responsibilities well as is sufficiently shown by his recurrent selection for official posts. At the Royal Sanitary Institute he was a vice-president and acted as an examiner of students; he was president of the Section of State Medicine in 1911 at the annual meeting of the B.M.A. and in the same year was chosen president of the Society of Medical Officers of Health. He was a member of the executive of the British Social Hygiene Council and of the Board of Studies of Hygiene in the University of London, and from 1917 until 1924 was president of the County Medical Officers Association. His long personal experiences led to much desultory but useful publications on many subjects of public health interest. He wrote on water filtration, the purification of sewage, and the spread of scarlatina by milk in different reports, while in his public lectures and addresses he made some useful summaries of the history of sanitary development in this country, and dealt with basic subjects such as the scope of the M.O.H., the evolution of the county health department, and the relation of voluntary effort to State authority in the carrying out of social and sanitary reform.

Dr. R. A. Lyster, a friend of 35 years' standing, an old pupil and assistant, sends us the following appreciation: "One of Bostock Hill's proudest boasts was about the number of his former students and assistants who are scattered over the country—indeed the world—occupying all grades of public health posts, and putting into practice the principles of prevention that they had learned from him. No man has had a stronger influence upon administrative public health in this country. Appointed professor of public health at an early age—he was for a long time the youngest member of the senior staff at Mason's and Queen's College, Birmingham—he was able to teach the essential principles of public health and preventive medicine to generation after generation of medical students. Bostock Hill's lectures will always be remembered by his students. He possessed gifts as a teacher such as are rarely found in medical schools, at any rate in this country. He was, moreover, obviously in love with his subject, and he enjoyed every minute he spent in teaching it.

"In his administrative activities he covered the widest possible field. While his life's work was undoubtedly the creation in Warwickshire of one of the finest of county health departments, he also held local positions as M.O.H. for many years, for the borough of Sutton Coldfield, the urban district of Erdington and the rural district of Castle Bromwich. And no member of the public health service has ever established a greater reputation for soundness of work. Perhaps this was due partly to his scientific training in addition to medicine. As an expert analytical chemist he combined the post of county analyst with that of county medical officer with marked advantage to both.

"Those who knew him best recognised that in addition to Bostock Hill the cultured medical and scientific man, and the sound and experienced administrator, there was also a shrewd and sagacious business mind, and an equable temperament which enabled him to view life from a philosophic standpoint. An attractive and lovable personality, he endeared himself to all his more intimate friends and old students to a degree established by very few teachers and chiefs of departments. None ever hesitated to turn to him for advice and help, and none was ever disappointed. All ranks of the public health service have lost in him a friend, while many mourn personally a teacher and a chief whose passing has made acute their sense of indebtedness to him."

Dr. Bostock Hill married Elizabeth, daughter of Mr. W. H. Barber, of Edgbaston, Birmingham.

HENRY AMBROSE LEDIARD, M.D. Edin., F.R.C.S. Eng., J.P.

Dr. Lediard, who died at Carlisle on Oct. 31st, a few days before his 85th birthday, was the son of Samuel Lediard, solicitor, and Mary Croft Whatley, both of Cirencester, and claimed among his forbears Thomas Lediard, F.R.S. (1685–1743), the historian and biographer of Marlborough. He was educated

ADDRESSES AND ORIGINAL ARTICLES

HÆMATURIA *

BY ANDREW FULLERTON, C.B., C.M.G., M.CH. BELF., F.R.C.S.I., HON. F.A.C.S.

SURGEON TO THE ROYAL VICTORIA HOSPITAL, BELFAST; PROFESSOR OF SURGERY IN THE QUEEN'S UNIVERSITY; EX-PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND

EVEN in these enlightened days a word of warning on the subject of hæmaturia is necessary, if one is to judge from the number of neglected cases that are constantly coming before the urologist. It cannot be too strongly emphasised that cessation of an attack of hæmaturia is no proof that the cause has been successfully dealt with. On the contrary the most serious disease of the urinary organs, malignant disease, is often characterised by intermittent painless hæmaturia, the intermissions lasting for days, weeks, or even months while the cause is becoming progressively more formidable and less eradicable. Hæmaturia, no matter how slight, should never be lightly regarded and every available means should be used to ascertain its exact cause at the earliest possible moment, lest the insidious onset of a disease curable in its earliest stage should be missed and a life sacrificed by incompetence or neglect. Fortunately, the means of diagnosis are at our disposal, for there is no branch of surgery in which more accuracy and refinement in diagnostic methods is possible, and there is no excuse for the happy-go-lucky methods of the past. The urologist may be compelled to make repeated and exhaustive examinations, involving great labour on his part and possibly much discomfort to the patient, and may even in rare cases have to resort to exploratory operation, but the issue is so important that the medical attendant cannot be considered to have discharged his duty to his patient so long as the source of the bleeding is left in doubt.

In opening a discussion eleven years ago, I gave some statistics of the cases of hæmaturia examined up to that time.[1] I will combine these cases with those subsequently seen, and make reference to certain points not sufficiently emphasised on that occasion.

In pre-cystoscopic days certain general rules were laid down by clinicians to enable the practitioner to make a shrewd guess at the cause and origin of hæmaturia in a given case. These rules may be useful to direct attention to a particular affection or a particular part of the urinary tract, but the ultimate diagnosis must be made by more accurate and scientific methods.

General Considerations

When blood is intimately mixed with the urine it is probable that the source of the hæmorrhage is the kidney. When the blood-stained urine is dark in colour the evidence is still more strongly in favour of a renal origin. Yet there are cases in which these tests are utterly misleading. All we can say with certainty is that blood has been shed in small or moderate quantity, allowing intimate mixture with the urine before clotting has had time to take place. The cystoscope in a renal case may show a red efflux, the smoky or dark colour of the voided specimen being due to the change of oxyhæmoglobin into methæmoglobin by admixture with the acid urine. A couple of examples will show the fallacy of these rough tests:—

A male, aged 56, presented himself with hæmaturia. The specimen passed was dark in colour. The only other symptom was frequency of micturition. Cystoscopy showed a malignant ulcer on the base of the bladder.

A male, aged 56, passed blood intimately mixed with the urine. He passed no clots, and did not complain of pain or dysuria. He had intervals of freedom with clear urine; later, tiny clots began to appear. The symptoms suggested hæmaturia of renal origin. Cystoscopy showed a papilloma of the bladder.

The size and shape of the clots may be of assistance in diagnosis. A long cast of the ureter is sometimes passed; its length and thickness indicate its origin. More frequently shorter lengths are passed. Casts formed in the urethra are thicker and often show constrictions corresponding to those normally present in this canal. Massive clotting suggests bleeding from the bladder or prostate, but primary or secondary hæmorrhage from the kidney after gunshot injuries may be so profuse as to fill the bladder with blood which rapidly clots. The same effect may be seen in civil practice from accidental rupture of the kidney, and in some cases of malignant disease of the kidney.

Frequency of micturition suggests that the site of the hæmaturia is the bladder or prostate, but I have several times seen renal hæmaturia due to new growths or other cause when I have expected to see an enlarged prostate, cystitis, or a bladder tumour. If frequency of micturition and hæmaturia are combined with pain in the glans penis, scalding, and urgency, and if, in addition, pus and mucus are present, cystitis may be suspected, but a positive diagnosis must not be made until malignant growth, tubercle, and calculus have been excluded by direct observation.

Pain in the lumbar region, culminating perhaps in renal colic, suggests an affection of the kidney on that side, but there are cases in which the cause of the pain is a papilloma or a malignant growth at the orifice of the corresponding ureter.

If the hæmaturia is initial, that is, at the beginning of micturition, it probably comes from the prostatic urethra, or possibly from the anterior urethra. Blood issuing from the urethra independently of micturition comes from a source distal to the compressor urethræ muscle. A small quantity may lie in the urethra and form a cast of the canal, which is swept out by the next act of micturition.

The blood may be passed in such small quantities that the microscope may be required to detect it. In every patient suspected of urinary trouble the urine should be centrifugalised and examined microscopically. This is especially necessary in cases of renal or ureteric calculus, when the diagnosis is in doubt. Blood, even microscopical blood, may be entirely absent in some cases of renal, ureteric, or vesical calculus at the time of examination, but repeated examination is very likely to detect it at some period of the patient's illness, and its discovery may help to determine whether the pain is due to stone or some other affection, such as appendicitis. The following case is an illustration:—

In March, 1930, I was asked to see a young man of 27, who, after an action of his bowels, was seized with a sudden severe pain in his right iliac fossa, associated with vomiting. His father, who was a doctor of much experience, was satisfied that the case was one of appendicitis, and urgently requested immediate operation. The patient had no frequency of micturition and an ordinary examination of the urine, such as is carried out at the bedside, revealed no abnormal constituents. There was tenderness in the right iliac fossa, but no rigidity of the abdominal muscles. I was not satisfied with the diagnosis until I had made a microscopical

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* Read before the Ulster Medical Society.

[1] Brit. Med. Jour., 1921, i., 923.

LONDON JEWISH HOSPITAL, Stepney Green, E.

THURSDAY, Nov. 17th.—4 P.M., Dr. Julius Burnford: A Survey of Treatment.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL POST-GRADUATE SCHOOL.

WEDNESDAY, Nov. 16th.—4 P.M., Dr. Monckton Copeman: Vaccination.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 18th.—4 P.M., Mr. A. Ryland: Demonstration of Museum Specimens.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 14th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Motor System.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Intracranial Pressure, Epilepsy, &c.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. Collier: Clinical [illegible]

THURSDAY.—2 P.M., Dr. Kinnier [illegible] Clinic. 3.30 P.M., Dr. Kinnier [illegible] System.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Collier: Confusion, Aphasia, Dementia.

ST. PETER'S HOSPITAL FOR STONE, POST-GRADUATE COURSE, Henrietta-street, Covent Garden, W.C.

WEDNESDAY, Nov. 16th.—3 P.M., Mr. Ogier Ward: Elucidation of Urinary Symptoms; Pain.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 16th.—4.30 P.M., Dr. H. N. Webber: Anæsthetics for Genito-urinary Cases.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Nov. 17th.—9 P.M., Mr. A. C. Palmer: Tubal Inflammation.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 15th.—5 P.M., Dr. H. W. Barber: Bacteriology and Mycology.

THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

WEDNESDAY, Nov. 16th.—5.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. Isabel G. H. Wilson: Day Dreams.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Nov. 16th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases.

ROYAL INSTITUTION, 21, Albemarle-street, W.

FRIDAY, Nov. 18th.—9 P.M., Dr. R. G. Canti: Cultivation of Living Tissue Cells.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

WEDNESDAY, Nov. 16th.—4 P.M., Dr. W. H. M. Telling: The Rôle of the Hospital Almoner in the Maintenance of Health and the Avoidance of Disease.

THURSDAY.—4 P.M., Dr. C. P. Blacker: Mental Defectiveness and Segregation and Sterilisation as Protective Measures.

PUBLIC HEALTH CONGRESS AND EXHIBITION, Royal Agricultural Hall, Islington, N.

MONDAY, Nov. 14th.—11.55 A.M., Opening of Congress by the Minister of Health.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate.

WEDNESDAY, Nov. 16th.—4.30 P.M., Dr. Simon Kelly: Hilus Tuberculosis.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Nov. 15th.—4.15 P.M., Sir William Bragg: The Crystal Structures of Living Matter. (Lloyd Roberts lecture.)

FRIDAY.—4.15 P.M., Dr. J. Wharton: Demonstration of Ophthalmological Cases.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Nov. 17th.—4.15 P.M., Dr. A. Renshaw: Undulant and Related Fevers.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

TUESDAY, Nov. 15th.—3.30 P.M., (in the Faculty Hall, Vincent-street), Prof. A. Hunter: Hormones.

WEDNESDAY.—4.15 P.M. (in the Western Infirmary), Mr. R. F. Young: Surgical Cases.

Appointments

ROBINSON, A. LEYLAND, M.D. Lond., F.R.C.S. Eng., has been appointed Professor of Midwifery and Gynæcology, University of Liverpool.

SINCLAIR, H. M., M.B., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts for the Maesteg district of Glamorgan.

Vacancies

For further information refer to the advertisement columns

Bolton Royal Infirmary.—Two H.S.'s. Each £125.

Bootle General Hospital, Derby-road.—Anæsthetist. One guinea a session.

Brighton, Royal Alexandria Hospital for Sick Children.—H.S. At rate of £100.

Bristol Royal Infirmary.—Hon. Physician.

Burton-on-Trent [illegible] O. and H.P. Each £150.

Canterbury Boro [illegible] sst. M.O. £350.

Central London [illegible] *Judd-street, W.C.*—Pathologist. [illegible]

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100. Surgeon. Also Pathologist. £40.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.

Dewsbury and District General Infirmary.—Second H.S. £150.

Doncaster Royal Infirmary.—Cas. H.S. £175.

East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.

Great Yarmouth General Hospital.—Two H.S.'s. Each £140.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—Surgeon to Out-patients. Also Anæsthetist. £25.

Hospital for Sick Children, Great Ormond-street, W.C.—Part-time Jun. Cas. O. At rate of £150. Also H.P. and H.S. Each at rate of £100.

Infants Hospital, Vincent-square, Westminster, S.W.—H.P. £75.

Ipswich, East Suffolk and Ipswich Hospital.—H.P. and Two H.S.'s. Each at rate of £120.

King Edward [illegible]—Pathologist. £170.

Leamington Sp [illegible] *pital.*—Hon. Surgeon for Diseases [illegible]

Leicester Royal [illegible] esthetist. At rate of £250.

Lister Institute of Preventive Medicine, Chelsea Bridge-road, S.W. [illegible] Fellowship in Bacteriology. £500.

[illegible] *natorium.*—Asst. Res. M.O. £200.

[illegible]—Part-time M.O.'s for Training Ship, *Exmouth*; and Stifford and Grays Children's Home. At rate of £200 and £150 respectively.

Lowestoft, St. Luke's Hospital.—Res. Asst. M.O. £350.

Manchester Babies' Hospital, Burnage Lane, Levenshulme.—Sen. Res. M.O. At rate of £125.

Plymouth, South Devon and East Cornwall Hospital.—H.P. and H.S. At rate of £120 and £100 respectively.

Poplar Hospital for Accidents, East India Dock-road, E.—Sen. Res. O. £200.

Preston, Lancs, Biddulph Grange Orthopædic Hospital.—Sen. H.S. Also Jun. H.S. At rate of £250 and £150 respectively.

Princess Elizabeth of York Hospital for Children, Shadwell, E.—Res. M.O. £200.

Reading, [illegible]—H.S. £150.

Rochdale [illegible] H.S. £200.

Royal Fr [illegible] .*C.*—Cas. O. At rate of £150. Dist. Obstet. Asst. At rate of £100. Res. H.P.'s, H.S.'s, and Res. Anæsthetist, &c. Also First H.P.

Royal Nationa [illegible] *234, Gt. Portland-street, W.* H.S. for [illegible] t rate of £150.

Royal Northern [illegible] *N.*—Med. Reg. £100.

Royal Waterlo [illegible] *and Women, Waterloo-road, S.E.*—H.S [illegible]

South-Eastern [illegible] *Sydenham, S.E.*—Jun. Res. M.O. At [illegible]

South Shields, Ingham Infirmary.—Jun. H.S. £150.

Tilbury Hospital.—Med. Supt. £200.

University College Hospital, Gower-street, W.C.—Hon. Clinical Asst., Hon. Asst. Radiologist. Also Hon. Orthodonist and Dental Surgeon.

Wakefield Mental Hospital.—Asst. M.O. £350.

West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.

Willesden General Hospital, N.W.—Cas. O., H.S., and H.P. All at rate of £100.

Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.

York County Hospital.—H.P. £150.

The Chief Inspector of Factories announces a *vacancy* for a Certifying Factory Surgeon at Rothwell (York).

ROYAL SANITARY INSTITUTE.—A sessional meeting of this institute was held at Durham during last week-end. On Friday the modern construction of infectious diseases hospitals was considered, after an address by Dr. J. A. Charles, deputy medical officer of Newcastle-on-Tyne. The subject of central hospitals with resident medical staffs was discussed, and Mr. T. C. Benfold, vice-chairman of the Durham county health committee, said the best interests of the community would be served by a full-time medical staff in a central hospital. "We ought to get away from the part-time medical officer," he said. "A person who is a local practitioner and at the same time a medical officer to a hospital is unlikely to give the best results to either hospital or patient. A local practitioner has first and foremost to look after his own patients before he spends his time at the hospital. A person who is making a livelihood from family patients has got to look there first. We want the best equipped medical men to deal with the hospitals."

seminal vesicles, and the urethra, including the meatus externus, were all infected with tubercle. I believe this is the normal direction of spread in the male. In the female the primary focus is always in the kidney. Very rarely does the bladder escape in tuberculosis, and the hæmaturia resembles in character that found in bad cases of cystitis. The blood comes for the most part from ulcers on the bladder wall. Severe hæmaturia from the kidney is not, in my experience, frequent. From the erosion which takes place at the apices of the pyramids in these cases one would expect frequently to see more bleeding of renal origin, but gross hæmorrhage is rare. A patient with severe scalding, great frequency of micturition, and hæmaturia, especially noticeable at the end of micturition, should always be suspected of tuberculosis, even if his colour and nutrition are good. Many cases of tuberculosis of the kidney and bladder run an afebrile course for a long time, and seem to keep up an appearance of well-being for months or even years.

Renal and Ureteric Calculus (*140 cases*).—One of the most frequent causes of renal hæmaturia is renal or ureteric calculus. Out of 206 cases seen, hæmaturia was noted in 140 or just under 70 per cent. The sharp spicules and knife-like edges found on some of these calculi are very likely to lacerate the mucous membrane of the pelvis of the kidney and ureter and the apices of the pyramids, and smart hæmorrhage is frequently seen. The bleeding is not, however, so severe as that in injury or new growths of the kidney. Quite frequently it is entirely absent, or may be in such small amount as to require the microscope for its detection. I wish to emphasise the fact that a patient may have urine entirely free from albumin, pus, and blood, and yet may have a calculus lodged in the pelvis of the kidney or arrested in the ureter. The only symptom may be pain, often of the well-known type known as renal colic. One example out of several will suffice:—

I recently saw a woman, aged 41, with severe renal colic on the left side. The urine was free from albumin, pus, and blood. The only physical sign was a unilateral diuresis on the affected side. I removed a calculus with crystalline projections, half an inch in diameter, from the pelvis of the left kidney.

On the other hand hæmaturia may be the only sign.

I have under my care at present a woman, aged 55, who has suffered for over a year from painless hæmaturia without any other sign or symptom. In August last I removed a large calculus from the pelvis of the left kidney, and four months later 14 calculi from the pelvis of the right kidney.

The two cardinal signs of renal calculus are renal colic and hæmaturia, and one or both may be entirely absent. Vomiting is frequently present. In these days radiography will often detect the smallest calculus, but in my earlier work, especially in the country, I had to depend on other methods for diagnosis. A history of renal colic with or without blood, the presence of pus, the presence of albumin, and a unilateral diuresis with a diminution of the specific gravity of the urine on the affected side afforded, in those days, the evidence upon which I often operated for stone. By far the most common ingredient of the calculus in my cases has been oxalate of calcium; phosphates come next, and uric acid or urates last of all.

Renal Hæmaturia of Undetermined Origin (*87 cases*). I now come to a group of cases, 87 in number, in which, often after the most careful urological examination, including, in a few, actual exploration of the kidney, I have been unable to state definitely what was the cause of the bleeding. Some of them have been followed up for years without any definite evidence of deterioration of the patients' health, and some have drifted no doubt into the hands of other surgeons who may have been able to diagnose them correctly. One or two of them have, I regret to say, subsequently shown signs of malignancy which might possibly have been recognised by more detailed examination. A certain number of them must, however, be placed in the category of what is known as renal epistaxis, renal hæmophilia, essential renal hæmaturia, or symptomless renal hæmaturia. The hæmorrhage in these cases of renal epistaxis is more or less severe, more or less persistent, and is seen to issue from one ureter. No gross changes in the kidney can be found to account for it. It has been attributed to passive congestion, circumscribed or diffuse fibrous changes, disturbances of the vasomotor and sensory nerves, multiple microscopic calculi of the papillæ, a varicose condition of the vessels of the papillæ, adhesions, microbic infections, and nephritis. I have never removed a kidney which appeared to me to be healthy, even if it was bleeding pretty profusely, and I have often seen the bleeding cease after the operative procedure adopted to explore the kidney. This conservative attitude was strengthened by a case I saw in July, 1908, at the Royal Victoria Hospital:—

The patient was a sailor, aged 30, who, two months after a fall on his right side on board ship, noticed that his urine was smoky. Prof. Rovsing, of Copenhagen, found blood issuing from the *right* ureter. X ray examination was negative. The right kidney was explored and nothing was found but adhesions to surrounding parts. The bleeding recurred, and I saw him on his return to Belfast. On cystoscopic examination blood was now seen to come from the *left* ureter. The specimen obtained from the side operated on by Prof. Rovsing was absolutely normal. Three years later I again cystoscoped the patient, who had been bleeding off and on since my first examination. The blood was now coming from the right side (the side operated on). I heard from him in 1923 to the effect that he remained well after his last visit to me until his ship was blown up by a submarine in 1917, and that after 24 hours' exposure in an open boat before being rescued he had a return of the bleeding and was admitted to the Glasgow Royal Infirmary, where operation was suggested but declined by the patient. He came home in a few weeks, and remained at home for some months. The bleeding, having lasted for 18 months ceased, and he remained well for some years. I saw him again in June, 1923. He was also seen at this time by Dr. Boyd Campbell, who found his urine normal and his heart and blood-vessels healthy. He again attended in February, 1926 (18 years after his first visit to me), with another attack of hæmaturia. On this occasion blood was issuing from the *right* ureter. This remarkable case shows the necessity for caution in dealing with a case of symptomless hæmaturia.

I had another patient under observation for seven years, during which time he had many attacks of bleeding without any serious deterioration of his health. I have not noticed in any of these cases the phenomenon which I have termed unilateral diuresis. The occurrence of this type of hæmaturia is sometimes urged as an excuse for temporising. Long experience, however, has taught me to look upon all cases of hæmaturia as serious and possibly dangerous, and to exhaust every method of diagnosis available before assuring the patient that he can look upon the discharge of blood from his urinary organs with complacency.

Pyelitis, generally Associated with Cystitis (*54 cases*). The essential feature of pyelitis is the presence of pus in the urine on one or both sides. The most usual organism present is the *Bacillus coli communis*, but I have seen staphylococci, streptococci, enterococci, and other organisms. Though severe hæmorrhage may take place, the amount of blood present has, as a rule, been small and not a dominant feature in the clinical picture. In acute cases the temperature is raised, and there may be tenderness or enlargement examination of the urine. This showed a number of red blood corpuscles. Operation was deferred, and next day a radioscopic examination by Mr. P. T. Crymble demonstrated a small shadow medial to the right ischial spine. A diagnosis of ureteric calculus was made and was confirmed by the passage, in a fortnight's time, of a small irregular stone composed of oxalate of calcium. The detection of microscopical blood in this case prevented the performance of an unnecessary operation.

In a case of hæmaturia, microscopical examination, especially if it can be carried out in the intervals between the attacks of bleeding, may be helpful in determining the cause. Mention need only be made of the presence of renal casts, cells from the kidney, ureter, or bladder, portions of growth, pus cells, crystals, and micro-organisms.

Diagnosis

Correct diagnosis of the cause of hæmaturia is possible in the large majority of cases. As a rule the urethroscope or cystoscope will indicate the source of the bleeding when it occurs in the urethra or bladder, and in the case of the kidney or ureter will demonstrate the side affected if bleeding is taking place at the moment. In the intervals between attacks, however, the urologist may have the greatest difficulty in ascertaining the cause. It is wise, therefore, to examine the patient during an attack, when the side affected will be apparent, but this does not mean that the urologist's labours are at an end. He must endeavour to discover the exact lesion and its situation. Blood coming from one ureteric orifice, for instance, may come from a lesion of the ureter, and the catheter must decide which part of the ureter is affected. It is desirable in all cases to take specimens from the pelvis of the kidney and from the ureter near its termination in the bladder, to avoid the error of mistaking bleeding from the ureter for renal hæmorrhage. Alteration in the character of the secretion or the presence of abnormal constituents in the urine may give valuable information. A tumour in the lumbar region or pain on one side will direct attention to the affected organ, but of themselves these signs and symptoms may not be sufficient to establish the diagnosis. Pyelography, intravenous or retrograde, will in a large proportion of cases, by demonstrating some departure from the normal in a ureterogram or pyelogram, give the necessary clue, but cases will arise in which the diagnosis still remains in doubt. In these doubtful cases there is much to be said in favour of an exploratory operation. This consists in inspecting the kidney, making an opening in the pelvis to examine the calyces and papillæ, and if need be, making an incision into the parenchyma of the organ.

A Series of Cases

Looking over my notes I find, grouped under the heading of hæmaturia, 1208 cases out of a total of 3400 cases seen. Thus more than a third of the patients presenting themselves to me for urological investigation have suffered at one time or another from hæmaturia. I am satisfied that in many of the remainder blood would have been found at some period if it had been carefully sought. This applies particularly to calculus, enlarged prostate, cystitis, tubercle, and new growths, in which at the time of examination blood may not have been present. I have, for instance, seen cases of renal calculus in which blood was entirely absent at the time of examination, and I recently examined the urine in a case of papilloma of the bladder during an interval of freedom from bleeding and found no trace of blood, even on microscopical examination. Repeated examinations must therefore be made in all urological cases, and the microscope should always be used lest small traces of blood should be missed. From the statistics I have given, it is obvious that hæmaturia is one of the most important, if not the most important, sign of disease of the urinary tract.

In the accompanying Table the cases are grouped according to the region affected; under each heading they are arranged in order of frequency. This has disadvantages, but is convenient for my present purpose :—

Table showing Cases of Hæmaturia

KIDNEY (605 cases)		Cases.
Tuberculosis of kidney (generally involving bladder)		153
Renal and ureteric calculi		140
Renal hæmaturia of undetermined origin		87
Pyelitis (generally associated with cystitis)		54
Injuries to kidney—		
Gunshot wounds	42	50
Contusions and lacerations	8	
Nephritis		38
Renal tumours and cysts		36
Hydronephrosis	9	15
Pyonephrosis	6	
Renal colic (cause ?)		14
Movable kidney		7
Accessory renal artery		3
Horseshoe kidney		2
Oxaluria		2
Henoch's purpura		1
Hæmophilia		1
Hæmaturia after pyelography		1
Perirenal sarcoma		1

URETER (6 cases)	Cases.
Injury to ureter	5
New growth in ureter	1

BLADDER (470 cases)		Cases.
Cystitis		190
Tumours of bladder—		
Simple papillomata	65	135
Malignant growths	68	
Fibromyoma	1	
Rhabdo-sarcoma	1	
Injuries to the bladder—		
Bladder injuries in warfare	54	57
,, ,, ,, civil practice	3	
Vesical calculus		51
Ulceration of bladder (not due to tubercle or new growth)		16
Ruptured vessels of bladder		8
Tuberculosis of bladder secondary to tuberculosis of epididymis		5
Bilharzia hæmatobia infection of bladder		4
Obstruction at neck of bladder		1
Diverticulum of bladder		1
Malignant growth in pelvis ulcerating into bladder		1
Foreign body in bladder		1

PROSTATE (115 cases)	Cases.
Enlarged prostate (including malignant disease)	107
Prostatitis and prostatic abscess	8

URETHRA (12 cases)		Cases.
Polypus of anterior urethra	3	4
,, ,, posterior ,,	1	
Ruptured urethra		3
Calculus in urethra		2
Periurethral abscess		1
Malignant growth of urethra		1
Urethritis		1

AFFECTIONS OF THE KIDNEY

Tuberculosis of the Kidney (153 cases).—Tuberculosis of the urinary tract is very common in the north of Ireland. Some years ago I went into the figures of cases cystoscoped in hospital and private practice and found that nearly 10 per cent. had urinary tuberculosis and in 75 per cent. of these hæmaturia was present. In the overwhelming majority the primary focus in the urinary tract was in the kidney. In my experience tuberculosis of the bladder arising secondarily to deposits in the vesiculæ, prostate, and epididymis is comparatively rare. If the ureteral catheter is used in all cases of tuberculosis of the vesiculæ and epididymis the surgeon will be surprised to find how often the kidney is affected. I have seen a case of descending tuberculosis in which the right kidney and ureter, the bladder, the prostate, the great relief from denervation of the kidney. I have not seen these movements of the lips of the wound in the pelvis described in the literature. In two cases recently I have been able to demonstrate them to bystanders. I should like confirmation of these observations by those who have frequent opportunities of operating on the kidney.

Movable Kidney (*7 cases*).—It is well known that hæmaturia may take place during Dietl's crises, which result from torsion of the pedicle of the kidney. In these cases, in addition to the interference with the circulation of the kidney, there may be kinking of the ureter, and hydronephrosis is a frequent complication. The kink is well seen by pyelography, and is usually sigmoid in shape.

In one case, a woman, aged 42, with fairly continuous hæmaturia for two months, cystoscopy showed blood-stained urine issuing from the left ureteral orifice, and pyelography demonstrated the shadow of the pelvis of the kidney lying close to the pelvic brim. The ureter at its upper part was bent like a whip, with the convexity of the bend upward, and the kidney hung like an appendage from its outer extremity.

Hæmaturia in these cases of movable kidney is not as a rule profuse, and is best treated by rest in the recumbent position followed by nephropexy.

Accessory Renal Artery (*3 cases*).—The symptoms in these cases are due to the contact which an abnormal renal artery, accompanied perhaps by a vein, makes with the ureter. A vessel, in passing to the lower pole of the kidney, crosses the upper end of the ureter, "bow-stringing" it, as Mr. Hurry Fenwick says. Hydronephrosis is a frequent result. In one of my cases an artery the size of the temporal was accompanied by a still larger vein which was completely occluded by what appeared to be fibrous tissue. The occlusion of the vein may have caused congestion of the affected segment. The pelvis of the kidney and the calyces were much dilated. It is well to bear in mind that the arteries of the kidney are end-arteries, though the veins anastomose. Ligature of an artery going to the kidney causes necrosis of the area of kidney supplied by it. Sepsis in the wound may end in sloughing of the necrosed segment, and possibly secondary hæmorrhage.

Horse-shoe Kidney (*2 cases*).—The symptoms in these cases resembled those of movable kidney, and were no doubt due to malposition of the organ with kinking of the ureter. These kidneys are especially predisposed to hydronephrosis, calculi, tubercle, and infections. The diagnosis may be made by a careful study of the pyelograms taken alternately on both sides with a suitable interval between. Double pyelograms taken at the same sitting are not devoid of risk.

Oxaluria (*2 cases*).—I have cystoscoped two cases of oxaluria in which the symptoms were attributed to the presence of numerous crystals of calcium oxalate in the urine. In one of them severe renal colic was complained of, but no stone was found at operation.

Henoch's Purpura (*1 case*).—I have cystoscoped one case of this affection. There were ecchymotic spots on the body, arms, and legs, particularly about the joints. Hæmatemesis and moderate pyrexia were present. On cystoscopy, blood-stained urine was seen issuing from both ureters. The urine contained blood casts and granular casts.

Hæmophilia (*1 case*).—I have cystoscoped one case of hæmophilia :—

The patient was a young man, aged 24, with a typical family and personal history. He complained of pain in the right lumbar region, and passed clots of blood. On cystoscopy the bladder was seen to be healthy. Blood-stained urine was obtained from the right ureter, and clear urine from the left.

Hæmaturia after Pyelography (*1 case*).—I have seen one case illustrating the risks of pyelography :—

The patient, a girl of 17, complained of pain in the region of the left kidney. A colleague acting for me took a pyelogram of the left kidney, using 12 per cent. solution of iodide of sodium, introduced with the usual precautions. The patient was seized with acute pain on the table and became faint. She passed blood in her urine for three weeks, with moderate fever. The pyelogram showed a kink of the ureter at its junction with the pelvis of the kidney. Before cystoscopy her urine has been free from blood, pus, and albumin. I saw her about a month later, when her urine contained a fair amount of pus, a few red blood corpuscles, and a trace of albumin. About five weeks after the pyelography the kidney was explored. It was somewhat larger than normal, and the capsule was seen to be completely stripped and separated from the cortex by a thin layer of fluid. On incising the capsule blood-stained serous fluid escaped. The underlying cortex was paler than normal. Beyond some thick adhesions at the lower pole of the kidney nothing abnormal was found, and the kidney was replaced after stripping back the capsule and denuding the posterior abdominal wall of fat to promote adhesions. The patient made a good recovery.

Perirenal Sarcoma (*1 case*).—In this case a perirenal sarcoma had compressed the right ureter and given rise to a hydronephrosis of the corresponding kidney. This became infected, and blood and pus were obtained from the right ureter after the catheter had passed an obstruction about 4½ inches up. Operation revealed an inoperable retroperitoneal growth which on section was reported to be a large round-celled sarcoma.

(*To be concluded*)

TROPICAL ULCERS:

A QUICK AND SUCCESSFUL METHOD OF TREATMENT BY EXCISION AND SKIN GRAFT

BY CLIFFORD JAMES, M.B. N.Z., D.T.M. & H. LOND.
F.R.C.S. EDIN.

MEDICAL SUPERINTENDENT, METHODIST MISSION HOSPITALS,
CHOISEUL, BRITISH SOLOMONS

THE two outstanding features of ulcers as they are found on this island are (1) their obstinate resistance to ordinary forms of treatment, and (2) the ease with which the scar formed on healing breaks down again. The unsatisfactoriness of out-patient treatment as the cases came to hospital, week after week, and the disappointment when the scar broke down and the whole process had to be gone through again, demanded some change in treatment. Available books offered various methods of treatment, but the recorded results were not encouraging. Surgery suggested itself, and it was by repeated attempt after each failure that eventually a degree of success was attained. In the belief that it may be of help to others, I wish to record these attempts.

The ideal aimed at was to find a simple method which would replace the ulcer by healthy skin in a minimum of time and at a minimum of expense. The ulcer was considered healed when the area was completely covered by epithelium, as judged by careful observation and by the fact that a dry gauze dressing did not adhere, but was dry and unstained on removal.

Complete success was entered if the ideal was reached, the type of patient and the site of the ulcer being taken into consideration.

Partial success was obtained if the ideal was reached but the time taken, while much shorter than that taken by lotions and dressings, was longer than that taken in a completely successful case—e.g., through a minor degree of sepsis, or through some foolishness on the part of the patient.

of one or both kidneys. It is unwise in the febrile stage to carry out any instrumental examination. After such an examination the temperature is likely to shoot up, and rigors may occur. Every case should be radiographed if the pyuria persists. I have more than once seen a patient treated for months by vaccines for pyuria due to an unsuspected stone in the pelvis of the kidney.

Injuries to the Kidney (*50 cases*).—Injuries to the kidney include gunshot wounds and the contusions and lacerations which are more familiar in civil practice. There were 42 cases of gunshot wounds, and I have dealt so exhaustively with these in a paper[2] published during the war that I need only refer to them very briefly. The hæmaturia may be microscopic, moderate, or profuse, and may be primary or secondary. If the hæmorrhage is profuse the bladder may be filled with clots, requiring an evacuator, or even cystotomy for their removal. A large perirenal hæmatoma may be present which can be felt as a tumour, and may be a sign of importance in certain transverse wounds in which it is not easy to locate the kidney affected. Secondary hæmorrhage took place in nine cases out of the 42. In eight of these a nephrectomy was considered necessary, and of these three died. In the ninth case the patient died from other wounds.

There were eight cases in civil practice in which contusions or lacerations were diagnosed, and in seven of these the symptoms were sufficiently mild to admit of cystoscopic examination. In the eighth case I removed the kidney without cystoscopic examination as an emergency operation. A comparatively slight strain is sometimes sufficient to injure the kidney and give rise to considerable hæmaturia. I have seen this in a patient who slipped on a plank and apparently bruised his kidney in the effort to right himself. Forced lateral flexion of the trunk was, in two of the present series, sufficient to cause considerable bleeding. In one a perirenal hæmatoma was present; blood was seen issuing from the ureteral orifice of the affected side, and clots were present in the bladder. The injury appears to be due to crushing of the kidney between the ribs and the iliac bone on the concave side. Blows and run-over accidents account for most of the cases, and the injury to the kidney is often complicated by damage to other important organs.

It is important to know when to interfere in cases of renal injury. It is almost certainly fatal to operate on a blanched patient. Blood transfusion followed by immediate operation may save the patient's life.

Nephritis (*38 cases*).—These cases belong to the domain of the physician rather than that of the surgeon, and their chief feature from a cystoscopic point of view is the presence in many of them of blood on both sides. In all some other sign or symptom was present, such as casts and albumin in the urine when the bleeding was for the moment absent, cardiovascular changes, albuminuric retinitis, œdema of the face and extremities, or some other indication of acute or chronic nephritis. Some of these cases have cleared up completely and have apparently quite recovered.

Renal Tumours and Cysts (*36 cases*).—In all cases of renal hæmaturia without other signs, the practitioner must have in his mind the possibility of malignant disease of the kidney. Of the tumours found at operation, hypernephromata were by far the most numerous. Other growths and cysts included malignant adenoma, sarcoma, malignant growths of the abdomen involving the kidney by continuity, a case of hydatid cyst which I saw in France, congenital cystic kidney, a rare form of cystic kidney removed from a child aged two years, and one or two cases judged to be inoperable. In the hydatid cyst and the cystic kidney removed from the child aged two years the bleeding, though noticeable, was neither persistent nor serious. In one case of congenital cystic kidney the bleeding was so profuse as to threaten the life of the patient. In several of the cases of hypernephroma the bleeding was considerable and clots were passed. Some of them suffered from renal colic, and others had no other symptom but painless hæmaturia, at any rate in the early stages. The appearance of a tumour in the side is evidence that the disease is in an advanced stage. Pyelography is a most valuable means of differential diagnosis between tumour and other renal conditions giving rise to hæmaturia, and should never be omitted in a doubtful case. Distortion of the pelvis, filling defects, and obliteration of calyces will convey much information to the practised eye and may indeed settle the diagnosis. If still in doubt, I am in favour of an exploratory operation. It must be borne in mind that many cases of malignant disease of the kidney run their course without hæmaturia. The responsibility of the practitioner in these cases is not so heavy as in those which give early warning of their presence by attacks of bleeding, separated, it may be, by long intervals of freedom. The occurrence of hæmaturia is too valuable a sign to be neglected.

Hydronephrosis and Pyonephrosis (*15 cases*) are conditions in which the pelvis and calyces are dilated from back pressure (hydronephrosis) and in which infection with pus formation (pyonephrosis) is likely to take place. The chief signs and symptoms are pain, sometimes developing into renal colic, with vomiting and a tumour in the lumbar region which varies in size or even disappears at times. When infection takes place, the temperature may rise, but one sees cases of pyonephrosis without fever. Hæmaturia is not a cardinal sign but was present in 15 cases. The urine from the affected side is usually of lower specific gravity than that obtained from the opposite kidney. At times no fluid can be obtained owing to the block. In one case inspissated blood was seen by the cystoscope to be squeezed out from the ureter of the affected side like ointment from a tube. Bleeding had evidently taken place at some time into the sac of the distended kidney. Intravenous pyelography may show the distended calyces or pelvis, but if the parenchyma of the kidney is seriously damaged no shadow will be seen. Injections of opaque solutions by ureteral catheter will show the degree of distension, and will outline the size and shape of the pelvis and calyces. The diagnosis is thus easily made.

Renal Colic without Obvious Cause (*14 cases*).—There are cases of renal colic with hæmaturia in which it is difficult or impossible to find a cause. Some of these are no doubt due to undetected calculi, or calculi which have been unconsciously passed. There may be, as L. Casper suggests, spasm of the ureter comparable with that of the œsophagus in hysterical people. I have seen the lips of the wound made into the pelvis of the kidney for exploratory purposes, or for the removal of a stone, slowly curl outwards and return to the resting position during observation, and especially in response to a slight stimulus, and have thought that this was due to increased irritability of the pelvis, possibly from some unexplained nervous cause. In one case of this sort the patient obtained

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[2] Brit. Jour. Surg., 1917, v., 274.

TABLE II.—SUMMARY OF CASES—*(continued)*

Excision and Delayed Graft

No. of case.	Size of ulcer in inches.	Site.	Type of ulcer.	Healing time in days.	Result.	Type of graft.	Remarks.
13	¾ × ¾	Int. ankle.	Ac. prog.	12	Comp. suc.	Thiersch.	Graft applied 4 days after excision.
14	2½ × 1	Lr. ⅓.	„ stat.	14	„ „	Seeds.	Graft applied 3 days after excision. Protein shock.
15	3¼ × 2	„	„ „	18	„ „	„	Graft applied 3 days after excision. Protein shock.
16	4⅓ × 3	Mid. ⅓.	„ prog.	22	„ „	„	Graft applied 8 days after excision. Protein shock.
17	1¾ × 1½	Ant. sup. spine pelvis.	„ „	?	Part. „	„	Graft applied 23 days after excision. Patient removed splint, dislodged all grafts, and left hospital. One and a half months later seen in village. Ulcer healed.

Graft Applied to Granulations

No. of case.	Size of ulcer in inches.	Site.	Type of ulcer.	Healing time in days.	Result.	Type of graft.	Remarks.
9	5 × 2½	Junction Mid. & Lr. ⅓.	Ac. prog.	?	Non-suc.	Thiersch.	Treated by lotions for 88 days, then grafted. No dressing for three and a half days. Found much sepsis and most of graft dead. See No. 10.
10	5 × 2½	„	Septic.	110 = (95 + 15)	Part. suc.	Seeds.	This is the same ulcer as No. 9. Three and a half days after failure of first graft seeds applied to granulations. Eusol dressings used, and in 15 days ulcer was healed. Protein shock useful.
11	1¼ × ¾	Mid. ⅓.	Ac. stat.	47 = (32 + 15)	„ „	„	After lotions for 32 days seeds were applied. After 15 days more ulcer was healed. Sepsis was not entirely eliminated at time of graft.

Curettage Followed by Immediate Seed or Thiersch Grafts

No. of case.	Size of ulcer in inches.	Site.	Type of ulcer.	Healing time in days.	Result.	Type of graft.	Remarks.
1	4 × 2¼	Dorsum foot and ant. ankle.	Ch. sep.	?	Non-suc.	Seeds.	Much sepsis. Most of graft came off. Ran away on seventy-sixth day.
2	4½ × 1½	Ext. foot.	„ „	33	Part. suc.	„	This ulcer had eaten away two toes and extended to heel. Age 15. Small amount of sepsis. Responded to eusol, and most of graft "took."
3	3 × 1½	Mid. ⅓.	„ „	?	„ „	„	Sepsis dislodged half of graft. See No. 4.
4	1½ × 1	„	„ „	45	„ „	„	This is same patient as No. 3. A further curette and seed graft, but sepsis still present. Healed 45 days after second curettage.
5	¾ × ¾	Plantar of great toe.	Ac. „	?	Non-suc.	„	Much sepsis. Patient ran away thirteenth day.
6	2 × ¾	Lr. ⅓.	Ch. „	202	„	„	Patient had elephantiasis of the leg. Sepsis not eliminated, grafts dislodged. Protein shock finally effective.
7	3½ × 1½	Mid. ⅓.	„ „ clean.	21	Comp. suc.	Thiersch.	Very little sepsis.

Curettage Followed by Delayed Graft

No. of case.	Size of ulcer in inches.	Site.	Type of ulcer.	Healing time in days.	Result.	Type of graft.	Remarks.
8	3 × 1½	Mid. ⅓.	Ac. prog. with septic subcutaneous channels.	39 + 16 = 55	Part. suc.	Thiersch.	Thorough curettage was followed after 39* days by Thiersch graft. Eighteen months after, graft not detectable.

Excision Only

No. of case.	Size of ulcer in inches.	Site.	Type of ulcer.	Healing time in days.	Result.	Type of graft.	Remarks.
12	3 × 2 2 × 1½	Right knee. Left „	Ac. prog. „ „	— —	Non-suc. „	— —	Patient fell from verandah. Abrasions were followed by acute spreading ulcers. Excision was done, but was insufficient. Patient died of toxæmia 18 days after excision during my absence.

* This period of 39 days was unduly long. At the time when grafting was indicated it was not convenient for me to do it.

Ac. prog. = Acute and progressive. Ac. stat. = Acute, but stationary. Comb. = Combined, progressive in one area, but stationary in another area. Ch. sep. = Chronic septic. Ac. sep. = Acute septic. Ant. = Anterior. Int. = Internal and lateral. Ext. = External and lateral. Mid. ⅓ = Middle ⅓. Lr. ⅓ = Lower ⅓. Comp. suc. = Completely successful.

grafts, absolute hæmostasis is not necessary. In Case 33 the seeds were placed literally in a "stream of blood," nor did the bleeding quite stop until the patient had been back in bed for three hours. Calcium chloride gr. 1 in 100 m. of water intramuscularly stopped it. The grafts in this case adhered in toto.

The graft which has been most successful is the *seed graft.* The sterile towel covering the prepared skin area is removed and a darning needle with a sharp point is jabbed gently into the skin. A "tent" of epidermis is lifted. A razor blade fixed in a pair of Kocher's forceps incises this tent by cutting just below the needle. This small seed is placed on the new ulcer bed, more seeds being removed until the ulcer is covered. One soon becomes adept at this little manœuvre, and what promised to be a long task is quickly finished. These seeds may be applied so that the bed is completely covered, or there may be a space between individual grafts. The closer together the grafts are applied, the shorter is the time of healing, but the difference in time is not great. Even if at first there is pale skin between seeds, in one to two months the whole area is black. The skin thickness varies in individuals, and so the depth of the seed will vary. The optimum is the depth of a Thiersch graft. So long as the area from which the seed has been taken is grey in colour and points of hæmorrhage appear—though minute areas of yellow fat are frequently visible—and the raw area of the seed is not yellow, the seed will be suitable. With practice, these seeds can be greatly increased in size.

The graft is carefully covered by paraffin wax gauze, sterilised by steeping in lysol for 30 minutes. (Coarse mosquito-netting boiled in hard wax and allowed to dry can be used.) With a swab damped in saline, the seeds are gently but firmly pressed on to the base, any blood is soaked up, and a piece of dry gauze is applied over the wax gauze. Some cotton-wool is teased and shaped so as to fit accurately over the graft, giving equal pressure. Over this is placed a layer of wool well soaked in equal parts of glycerin and red lotion, which soaks the wool pad. More wool is applied and a bandage is bound gently but firmly over all. The same dressing is applied to the denuded area on the thigh, and the patient is returned to bed with his foot on a pillow. Latterly in some cases I have been putting over all one 3 in. plaster bandage, for its effect in keeping the patient to his bed. Where an ulcer is situated over the malleoli or anterior of the ankle-joint, plaster is advisable, a window being cut out at the first dressing two days after operation.

After-treatment.—On the second day the wool is very gently removed by soaking it in glycerin lotion. Everything is removed down to the wax gauze. This is easily done without disturbing the grafts. If everything is dry

TABLE II.—SUMMARY OF CASES

Excision Followed by Immediate Skin-graft, by Seeds, Thiersch, or Combination of Both

No. of case.	Size of ulcer in inches.	Site.	Type of ulcer.	Healing time in days.	Result.	Type of graft.	Remarks.
18	1¼ × 1¼	Ext. ankle.	Ac. prog.	23	Comp. suc.	Seeds.	Time would have been shortened if plaster had been applied. Two and a half years later graft not detectable.
19	1 × ¾	Lr. ⅓.	” stat.	—	Non-suc.	”	Age 70. No "healing power." Grafts came off one by one. No sepsis. Protein shock produced no reaction.
20	1½ × 1½	”	” prog.	9	Comp. suc.	”	30 mill. T.A.B. intravenously.
21	1½ × 1½	Mid. ⅓.	Ch. sep.	10	” ”	”	
22	3 × 1½	Dorsum foot.	” ”	15	” ”	”	30 mill. T.A.B. intravenously. An attack of dysentery soon after grafting.
23	1 × ¾	Lr. ⅓.	Ac. prog.	17	” ”	”	Healing slow. Areas (minute) between seeds slow to epithelialise. Protein shock.
24	1½ × 1½	Int. ankle.	” ”	12	” ”	”	Protein shock.
25	2 × ¾	Mid. ⅓ ext.	” ”	—	Part. suc.	”	Sepsis introduced during dressings. Half graft "took." Re-excision and graft. See No. 31.
26	2 × 1	Ant. ankle.	Ch. sep.	18	Comp. suc.	”	Difficult patient. Protein shock.
27	1¼ × ¾	Ext. ”	Ac. prog.	32	” ”	”	Ulcer was situated upon malleolus. Plaster should have been applied earlier. Protein shock.
28	2 × 1	” ”	Ch. sep.	7	” ”	”	Good patient. Protein shock.
29	1¼ × ¾	” ”	Ac. stat.	6	” ”	”	
30	¾ × ¾	” ”	” ”	5	” ”	”	
31	2 × ¾	Mid. ⅓ ext.	” sep.	7	” ”	Seeds and Thiersch combined.	See No. 25. The ulcer and previous graft were re-excised and re-grafted. Result: comp. suc. Protein shock.
32	1 × 1	Ext. ankle.	” stat.	6	” ”	Seeds.	—
33	¾ × ¾	Mid. ⅓.	” ”	7	” ”	”	—
34	½ × ½	Lr. ⅓.	” ”	6	” ”	”	—
35	1½ × 1½	”	Ch. sep.	7	” ”	”	Plaster applied.
36	1½ × 1½	Mid. ⅓.	Ac. stat.	7	” ”	”	
37	4 × 1	Ant. ankle.	” prog.	13	” ”	”	
38	3 × 1	Mid. ⅓.	” stat.	5	” ”	Seeds and Thiersch combined.	
39	3 × 1	”	” ”	7	” ”	”	
40	¾ × ¾	Lr. ⅓.	” ”	16	” ”	Seeds and plaster applied.	A slight degree of sepsis occurred, but did not interfere greatly with the healing. Protein shock by autohæmotherapy unsuccessful.
41	1 × ½	”	” ”	11	” ”	”	Protein shock by autohæmotherapy unsuccessful.
42	1½ × ¾	Over lig. patellæ.	” ”	7	” ”	”	
43	1½ × ¾	Lr. ⅓.	” ”	6	” ”	”	
44	1¼ × ½	Int. ankle.	” ”	21	” ”	”	In spite of her foot being in plaster she persisted in walking about when the chance came. Protein shock by autohæmotherapy unsuccessful.
45	1 × ¾	Lr. ⅓.	” ”	10	” ”	”	Good patient.
46	¾ × ½	Mid. ⅓.	” prog.	?	Part. suc.	”	Ran home, but returned next A.M. At 16 days ulcer healing rapidly where seeds had been displaced. Protein shock unsuccessful.
47	3 × 1½	Lr. ⅓	” ”	18	Comp. suc.	Thiersch.	—
48	3½ × 1½	”	” ”	13	” ”	”	Sequestrum removed on admission.
49	2½ × 1¼	Int. ankle.	Ch. sep.	13	” ”	”	Protein shock effective in speeding up healing.
50	1½ × 1	Foot dorsum.	” ”	13	” ”	”	Aged 65–70.
51	2½ × 1½	Lr. ⅓.	Ac. stat.	9	” ”	”	—
52	2½ × 1½	”	” ”	20	” ”	”	Patient walked about immediately after grafting. Some of graft did not take. Hæmatoma formed under it.
53	2½ × 1¼	”	” ”	19	” ”	”	—
54	2½ × 1¼	”	” prog.	10	” ”	”	—
55	1¼ × ¾	”	Ch. sep.	14	” ”	”	—
56	2¼ × 1¼	”	” ”	13	” ”	”	Graft strong skin 11 months later.
57	1¾ × 1¼	Mid. ⅓.	” ”	?	Part. suc.	”	Sepsis introduced at operation. Half graft "took." Patient ran away. Healing well.
58	2½ × 1	Lr. ⅓.	Ac. stat.	12	Comp. suc.	”	An attack of dysentery subsequent to grafting.
59	1¼ × ¾	Ant. ankle bone involved.	” prog.	23	” ”	”	Should have been put in plaster. A child who could not keep sufficiently still. Ten months, graft strong.
60	2½ × 1¼	Ant. ankle.	Ch. sep.	13	” ”	”	Plaster applied.
61	1 × ¾	Ext. ”	Ac. prog.	14	” ”	”	
62	2½ × 1¼	Lr. ⅓.	” stat.	27	” ”	”	Stood up immediately after operation. Some bleeding dislodged some of graft. Protein shock.

ADVANTAGES OF EXCISION AND SKIN-GRAFT

(1) Excision removes the ulcer and the scar tissue, which contains dormant organisms. (2) Skin-grafting replaces the ulcer and scar tissue (which would be formed were the ulcer to heal naturally) by skin, which soon functions normally except for diminution in sensation and a certain dryness due to lack of sebaceous material. The graft becomes surprisingly soft and pliable. This is accomplished in a very short time; the average of the 41 cases where the time could be ascertained was 13 days for complete epithelialisation. (3) The expense is small,
inexpensive, and the instruments
4) The technique is simple and can
ny doctor who will observe the
cleanliness and asepsis. (5) The
ds (and where suitable a Thiersch
d) is followed by success in 91 per
nd partial success in another 7 per
reparation of the theatre beforehand
Given the usual stock of sterilised
swabs, &c., a sister assisted by an
prepare the theatre in 20 minutes.
l anæsthetic is necessary. (8) Very
n is needed after the graft is put on.
nteresting method to the doctor and a
ne to the patient. (10) These patients
t proportion of the out-patient work.
s reduced by clearing up the condition

vantages are: (1) It is an operation, if
d one, and so preparation must be made
observed, as with all operations. (2) It
ain time in bed. Our average was 11 days.
re two chances out of every 100 of failure.

ADJUVANT TREATMENT

t treatment consists of: (1) Protein shock by
ravenous injections has often proved useful
case. Autohæmotherapy by injection of
od from the patient into his gluteal muscles
roved successful in producing a good reaction.
general treatment of all ulcer cases by quinine, cod-liver oil, compound syrup of phosphate of iron, and milk when possible. The standard case noted above was also on this routine.

SUMMARY

The ideal of a simple method which would heal a tropical ulcer by replacing it with normal, or nearly normal, skin in a minimum of time and at a small expense has been sought. A satisfactory and surprisingly successful method has been found in excision and skin-graft, seeds being the surest method of graft and the easiest of application. In suitable cases Thiersch grafts can be combined with seeds.

The results of this method in 45 cases are: completely successful, 91 per cent.; partially successful, 7 per cent.; non-successful, 2 per cent. Average time taken for complete epithelialisation of the area 13 days. The method of treatment described is suitable for all states and groups.

Christie Cancer Hospital.—A week or so ago Lord Derby opened the new Christie Cancer Hospital and Holt Radium Institute at Withington, Manchester. Hitherto the Cancer Hospital has been housed in Lorne-street, and the Radium Institute in Nelson-street, a few hundred yards away; the two are now linked together. There are 104 beds, 12 of them in separate rooms for paying patients. The two theatres have an intermediate chamber in which one outfit of equipment will be stored, and they will be served by one anæsthetising department. A nurses' home has been provided, and the hospital is surrounded by spacious gardens.

ADRENAL NEUROBLASTOMA

A CASE WITH METASTASES CAUSING BLINDNESS

By Frank W. Law, M.D. Camb., F.R.C.S. Eng.

Adrenal neuroblastoma—also variously called suprarenal sarcoma, adrenal neurocytoma, and malignant medullary hypernephroma—is a rare disease of childhood, which usually presents a typical syndrome which renders it easy of diagnosis in spite of its rarity. While much discussion has ranged round the actual nature of the tumour, the clinical aspect of the condition has been agreed upon for many years, though the various manifestations of the disease caused considerable confusion until Frew,[1] in 1911, showed that the cases were divisible into two groups, showing differing clinical pictures, according to the side of the body upon which the primary lesion was located.

Cohn,[2] in 1894, described a case which he called "medullary sarcoma of the right suprarenal, with secondaries"; this occurred in a female child of 9 months, who died in five weeks. He describes the existence of a palpable tumour in the right loin, together with right proptosis, and secondary deposits in the skull; no blood count is given. In an important paper in 1901, Pepper[3] reported the occurrence of "congenital sarcoma of the liver and suprarenal" in a child who died at six and a half weeks; he describes five similar cases, all of which fall in the group under consideration. But in addition he tabulates 46 further cases of so-called "primary sarcoma of the suprarenal gland"; since these include patients up to the age of 68 years, and since in only one of the whole series is there mention of cranial metastases, it is evident that many widely differing types of abdominal tumour are represented. Bruck,[4] in 1905, and Ogden and Matthews,[5] in 1906, described cases of round-celled sarcoma of the suprarenal; each of these papers is of interest since the writers describe the occurrence, for apparently the first time, of the hæmorrhagic streak in the skin of the lower eyelid. In the latter paper there is mention of a blood picture indicative of a secondary anæmia.

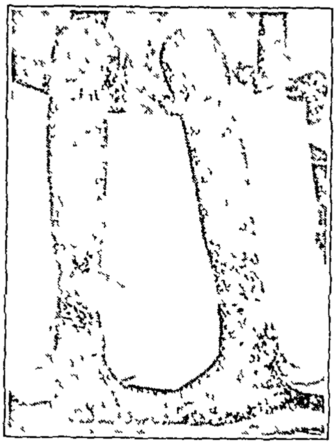
In 1907 Hutchison[6] gave a careful account of sarcoma of the suprarenal with metastases in cranial bones. He described seven new cases and three old, occurring in children aged from 9 months to 9 years, of whom seven were male and three female, and mentions, as the first indication of the disease, swellings on the skull. There was a high degree of secondary anæmia, but, he states, no leucocytosis; a tumour was palpable in five cases, and was situated on the right side in four and the left side in six. He mentioned, in the consideration of the differential diagnosis, infantile scurvy and chloroma (the former evidently on account of the hæmorrhagic streak); also that there were no sexual changes. This latter fact is evident, since the tumour is situated in the medullary portion of the gland; such changes occur in cortical tumours, as has been so well described by Bullock and Sequeira,[7] Guthrie and Emery,[8] and Collet.[9] Glynn,[10] in 1911, gave an excellent review of published accounts of cortical as well as medullary suprarenal tumours, furnished with a comprehensive bibliography.

Our knowledge of the disease was amplified and clarified, as has been mentioned, by Frew in 1911, who discussed Hutchison's paper, and described a large series of cases; his main thesis was that the and there is no sign of sepsis, a fresh dressing is applied and the ulcer left for a further three days, or longer, depending on one's certainty that no sepsis is present. The wax gauze can be removed after a week. If at any dressing there is the slightest sign of sepsis, the wax gauze is removed and the graft is dressed with eusol covered with protective. The patient in a successful case is allowed up when the area is quite dry and completely epithelialised. The graft can be covered with vaseline or lanoline, and a bandage worn till the skin is strong. Most patients are loth to leave off their piece of bandage, and this is not a bad thing for it protects the graft.

COMMENTS

If one is certain that no sepsis is occurring, the dressing can be left untouched for ten days, but it is very difficult to be certain.

Case 9 was a youth who came in at a time when I was not able to skin-graft his ulcer. He was kept on a lotion of glycerin, hydrogen peroxide, and water, equal parts. This was cleaning up the ulcer to such an extent that operation was delayed. Thiersch grafts were applied to seemingly clean granulations. I left the dressing unchanged for three and a half days. On removal, the ulcer was a bed of pus, and most of the grafts had lifted off and were dead. After only another three and a half days I regrafted the ulcer with seeds and dressed it with eusol b.i.d., and in 15 days from the grafting the ulcer was completely epithelialised. Its area was 5 by 2½ in.



Two ulcers of (?) ten years' duration. Healed—right 11 days and left 15 days after grafts applied. Excision was done, but, as in later cases, more of the white scar tissue surrounding the ulcer should have been removed. Some time afterwards an acute ulcer developed in this scar tissue between the normal skin and the graft and needed excising and grafting. Healed in 17 days.

This shows: (1) the disastrous effect of an undressed ulcer where sepsis had occurred, and (2) that, to a certain extent, a graft can be made successful by eusol dressings in spite of sepsis.

Should sepsis occur beneath a Thiersch graft, the whole piece usually lifts off and a considerable area is denuded. If bleeding or serous oozing is considerable, it will lift off, if not completely, at least in places. If, in removing the graft, one goes too deeply, the area frequently takes some time to heal. In Case 57, after excision, one Thiersch graft had been applied. Of a sudden a minute fly came from "nowhere," landed momentarily on the raw area remaining, and flew away. I should have re-excised the area, but did not. The graft covering this area came off wholly, whereas the other remained firmly attached. With seeds sepsis is a much less important factor. In my first unsuccessful cases it was common to see, here and there, seeds holding (though not spreading) even when bathed in a sea of pus. Secondly, their propensity for "taking" is often extraordinary, and with enough sepsis to spoil a Thiersch graft seeds will be successful with eusol dressings. Then again, seeds can be applied where absolute hæmostasis cannot be attained. I have placed seeds around a small arteriole which persisted in bleeding. Also the area from which the seeds are removed is invariably healed in ten days. Latterly, in large ulcers, I have combined the seed and the Thiersch methods, applying the latter to dry flat areas and the former to oozing, irregular, or doubtful areas—e.g., in Cases 31, 38, 39 the graft was healed in seven, five, and seven days respectively.

I have mentioned sepsis so frequently that it may appear as though it was frequent. This is not so. In the last 45 cases, numbers 18 to 62 inclusive, it has been infrequent. My previous methods—e.g., curettage—were failures because of sepsis. And further, a great deal of my work has been done in surroundings which were anything but ideal for surgery. A leaf building with the dust and insect life which this means, and the constant spraying of insect lotions into the air to keep away intruders, keeps the word sepsis ever before one's mind. I have had one white sister most of the time, and a very raw orderly to assist her. I have done most of these ulcers with no assistant other than a native to hold the foot and the sister to keep an eye on the patient and his pulse. In a properly equipped theatre sepsis should be absent. This absence of facilities is the strongest point in my contention that this is a simple method and should produce results equal with mine in any medical man's hands.

OTHER METHODS TRIED

1. *Thorough curettage followed by seed graft.*—This was invariably followed to a greater or less extent by sepsis, which was the cause of all the non-successes. Results (8 cases): success, 1; partial success, 4; *non-success*, 3.

2. *Treatment of ulcer by dressings until clean and then skin-grafting.*—This method takes too long, and it is difficult to be sure that sepsis is absent. Results (3 cases): success, 0; partial success, 2; non-success, 1.

3. *Excision followed after a short period (three to seven days) by skin-graft.*—This is a good method, but it means two operations; the second one, however, needs only local infiltration of the skin area. Results (5 cases): success, 4; partial success, 1; non-success, 0.

SOURCES OF FAILURE

Causes of non-success were as follows:—

Case 1, sepsis.

Case 2, sepsis followed by the patient running away.

Case 9, sepsis and leaving the dressing too long before inspecting the graft.

Case 12, inefficient excision, a virulent infection in a patient of low vitality. Fatal.

Case 19, senility (aged 70) and lack of response to any treatment.

Causes of partial success.—(Partial success means that the ulcer was longer than the "minimum time" in healing.)

Cases 2, 3, 4, 8.—All were curetted and the sepsis was *not completely removed.*

Cases 10 and 11.—Time taken awaiting a clean granular surface was too long (88 and 45 days).

Cases 17 and 46.—Owing to the patient removing his bandage or taking a stroll during the night following operation grafts were dislodged. (These people are very primitive. Head-hunting has not long ceased, there is no Government official on the island, and superstition is rife. One can therefore expect such things as these accidents to happen to the grafts.)

Cases 25 and 57.—Sepsis introduced at operation (Case 25) or carried to the graft during dressings (Case 57). These are the only two cases where sepsis was of moment in the 45 cases treated as described above.

Causes of a rather longer period than usual in successful cases are to be found in delay in applying plaster to an ulcer on a malleolus or to the patient getting out of bed on the day of operation and dislodging a graft or two, 32 and 27 days respectively.

POST-MORTEM FINDINGS

A post-mortem examination was carried out, and the following is a report of the findings :—

A wasted child, with a marked waxy pallor. The eyelids are discoloured as by subcutaneous hæmorrhages.

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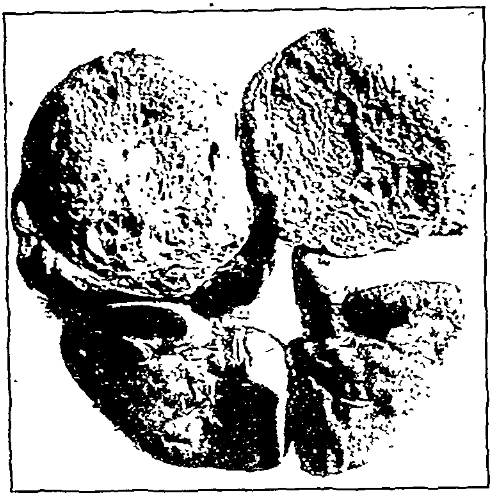

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In the *thorax* a few enlarged soft and fleshy glands are present in the anterior mediastinum. These enlarged glands can be traced upwards into the root of the neck, and are especially prominent behind the left sternoclavicular joint. They are also found in the bifurcation angle of the trachea. After the removal of the thoracic contents thick fleshy masses of growth are seen on the posterior wall intimately associated with the ribs beneath them. They are present on both sides of the vertebral column. Adherent to the diaphragm on the right side, and lying in close relationship with the lower lobe of the right lung, is a dark firm mass of growth which is cuneiform in shape and rather larger than a walnut. It contains a single cyst, which occupies about one-third of its bulk. In the lower lobe of the right lung is found one small nodule of growth—in all other respects the lungs are healthy. The heart and pericardium are normal.

The *brain* presents considerable œdema of the pia-arachnoid membranes, and definite pressure columns are found in the cerebellum—but in other respects it is normal, and there is no evidence of meningitis. At the base of the skull two dark swellings are found beneath the dura anteriorly. The smaller is the size of a grape, and is found in the right orbital fossa in the angle formed by the orbital plate and the vertical portion of the frontal bone. It is soft and circumscribed, and on incision exudes a quantity of thick blood. The larger swelling is diffuse and situated in front of the pituitary fossa. It extends forward and laterally over the lesser wings of the sphenoid and the orbital plates of the frontal bone, and surrounds the optic nerves. The same thick bloody fluid exudes from this as from the smaller swelling; there is little or no firm tissue present. A slight circumscribed discoloration on the anterior aspect of the frontal bone above the left supra-orbital ridge suggests the commencement here of another metastasis. Histologically the suprarenal tumour and its metastases were found composed of small, round, closely packed and deeply staining cells. The appearances in sections are typical of a neuroblastoma of the suprarenal gland.

COMMENT

It will be seen, from a consideration of this case, that the distribution of the secondary deposits was by no means typical—for instance, none was found in the lumbar glands, and there was evidence of only one in the cranial bones. The subdural deposits are very unusual; though the case presented the common symptom of blindness, this came about in an entirely unusual, and hitherto unrecorded, manner, and there was never any proptosis, papillœdema, or optic atrophy such as is almost invariably described in these cases. Diagnosis was extremely difficult and was never definitely made; at one time that of leukæmia was considered, though no fundus change of any kind was ever present. The secondary anæmia was typical; but there was also a definite lymphocytosis which has not been remarked before. Again, no explanation is forthcoming as to the nature of the subcutaneous nodules; it is possible that these were really atypical secondary deposits of which the cellular elements had degenerated.

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NOTES UPON HYPNOTIC STATES

BY ALEXANDER CANNON, M.D. LEEDS, PH.D., D.P.M.

I HAVE formed the following conclusions as a result of some years of work on normal and abnormal subjects in the hypnotic states.

(I.) The field of consciousness is narrowed during hypnosis, as is evidenced in the person hypnotised adding up figures.

(*a*) The subject is commanded to open his eyes without awakening, whilst a paper is placed before him containing two or more columns of figures, one column of which he is told he can see (a negative hallucination is suggested for the others). The visualist sees the letters either become smaller and smaller, indistinct, more faint, or appear farther away, as he carries out the process of addition. On the other hand, the auditory thinker can detect no change in the figures—as a rule he says that he did not take notice—but when the numbers to be added up are (*b*) dictated to him, with his eyes closed, he believes that the hypnotist's voice gets softer and softer, or more and more indistinct, until towards the end he can hardly hear the numbers being called out. (*c*) The visuo-auditory thinker detects slighter growth was carcinomatous rather than sarcomatous in nature, in spite of its appearance, and that the clinical picture differed radically according as to whether the growth occurred on the right side or on the left. His paper is of sufficient importance to warrant a summary of his argument.

In reviewing the subject in general he gives the age-incidence as from 2 weeks to 10 years, the majority of cases occurring between the ages of 2 and 3 years. Heredity and trauma may be discounted as factors in its occurrence; 51 of his cases were left-sided and 22 right-sided. In all cases where the blood was examined he reports a marked secondary anæmia.

When the growth occurs on the left side, evidences of spread and secondary deposits are commonly found in the lumbar glands and those in relation to the aorta and the common iliac arteries. A common feature of such cases is pain in the lower limbs, which Frew attributes to pressure on the lumbar plexus by the enlarged glands. The other glands affected are the intercostal, mesenteric, those at the hilum of the liver and in the posterior mediastinum, a knot behind the inner end of the left clavicle, and the anterior deep cervical. The bony secondary deposits are located in the ribs, sternum, maxillæ, and cranium in the medullary cavities; exophthalmos commonly occurs on the side where the cervical glands are the largest, and in a left-sided growth this is usually on the left side.

In right-sided cases there is a tendency for the growths to be larger, to involve the kidney, and often to remain localised to the abdomen. The glands more usually involved are those on the upper surface of the liver and diaphragm, the anterior mediastinal, and those at the inner end of the right clavicle; the lungs and lung roots are commonly the seat of secondary deposits. Proptosis usually occurs first on the ipsolateral side, and there is no pain in the limbs; the growth is usually palpable and, as in left-sided cases, there is marked secondary anæmia.

From the anatomical fact that the lymphatics from the left suprarenal gland run to the lumbar glands, whereas those from the right run to the right lymphatic trunk, Frew concludes that spread of the neoplasm occurs via the lymphatics, and that anatomical considerations will explain the two different clinical types. He also concludes that the growth is carcinomatous in nature—which is reasonable, when it is considered that it arises from a tissue originating in the neural ectoderm.

As to frequency of occurrence of this disease, it is felt that the adjective rare is justified; one cannot but feel that the long lists of cases given by some of the earlier writers must include diseases other than the one under consideration. In the Paddington Green Children's Hospital some 40 post-mortem examinations are made in a year, and the annual turnover of in-patient cases is in the neighbourhood of 800; during the last 20 years, as nearly as I am able to ascertain, there have come under observation four cases of the disease, of which three were confirmed post mortem. Dr. Reginald Lightwood has kindly provided me with similar figures from the Great Ormond-street Children's Hospital; with an annual turnover of some 7000, with 200 post-mortem examinations in the year, there have been seen six cases of adrenal neuroblastoma in the last six years, of which five were confirmed post mortem. In his investigations Frew found that in 7000 consecutive autopsies on children under 12, 25 cases were reported. Considered as a percentage occurrence at post-mortem examinations, the figures from these three different sources are, therefore, 0·38, 0·42, and 0·36 per cent. respectively.

RECORD OF A CASE

My interest in the condition was aroused by my having to deal with the case here described; while showing some typical features, it was so atypical in many ways that it is worthy of record.

A male child, 11 months of age, was brought to me on *June 20th, 1931*, by his mother, who complained that, in her opinion, the child had been blind for a week; apart from some unusual irritability, she had noticed no other change in the child. The patient was a third child, the previous two, both prematurely born, having died at the age of 6 weeks and 11 weeks respectively from causes unconnected with this patient's condition.

On examination in the out-patient department of Paddington Green Children's Hospital it was found that there was no response whatever on the child's part to any kind of visual stimulus. The pupils were perhaps a little dilated and quite inactive; there was slight head retraction and a faint rash over the back and chest, but no other positive sign. In spite of the inactivity of the pupils, a tentative diagnosis of cortical amaurosis from post-basic meningitis was made, and the child admitted into hospital. The temperature was 98·8° F., pulse-rate 156, and respirations 24. The tongue was furred, and the tonsils and submaxillary glands enlarged. Nothing abnormal was found on examination of the thorax; there was slight abdominal distension, and several subcutaneous nodules were palpable, situated as follows: one over the eleventh rib in the scapular line; one, with satellites, in the left iliac region; one in the left lumbar, and one in the right iliac regions. These lumps were all hard in consistency, and measured roughly 1 by 1 in., their edges were irregular, and they were free of the skin though attached to deep structures.

In the left hypochondrium there was palpable a tender abdominal tumour, the size of an orange, with an irregular rather sharp edge; the tumour moved downwards and inwards on respiration, its dullness was continuous with that of the spleen, and it was regarded by all observers as being an enlarged spleen. The liver was of normal size; motor and sensory power (apart from vision) were normal, and all reflexes (apart from the pupillary reflex) were normal.

One of the subcutaneous nodules was excised; microscopical examination revealed the fact that it consisted merely of poorly vascularised fibrous tissue.

The blood count was as follows:—

Red cells	*3,210,000*	*Polymorph*	27·6%
White cells	12,500	Lymphocytes	69·2%
Poikilocytes ..	Many	Hyal. transitional ..	2·8%
Nucl. red cells ..	95%	Eosinophils	0·4%
Hæmoglobin ..	40%	Basophils	Nil
Colour-index ..	0·62		

Polychromasia was present.

The cerebro-spinal fluid was slightly turbid with one drop of blood. Cell count, 10 per c.mm. The slight excess can be explained by the small amount of blood present. No organisms were found in films; no pathogenic organisms were present in culture.

One of the most important points about the case is that, throughout the whole illness, there was never any proptosis, papillœdema, or other ocular manifestation, with the single exception of the absent pupillary reflex already mentioned.

Generally speaking, the child was restless and fretful, frequently perspiring about the face and head, and showing a slight but definite degree of head retraction. The temperature and pulse-rate varied *considerably, reaching* 101·2° and 180 respectively on the 23rd and 24th, 103·8° and 156 on the 28th, 104·4° and 180 on the morning of July 6th, and falling to 98·4° and 140 on the 3rd. The bowels were regular; vomiting occurred on June 21st, 22nd, July *5th* and 6th. Loss of weight began to be evident on the 4th, when the skin became very pale, wrinkled, and inelastic; sedatives were necessary at times from this date onwards. At this time there appeared a blood-stain in the *right lower eyelid* which became progressively larger and darker, a similar stain appearing on the left lower lid shortly before death. A second lumbar puncture was performed on the 5th, and fluid under considerable pressure was withdrawn; this was not the case when the first specimen was taken, no increase of pressure being detected then. Early on the 7th the pulse was impalpable, and respirations rapid and gasping; death occurred at 6 A.M.

POST-MORTEM FINDINGS

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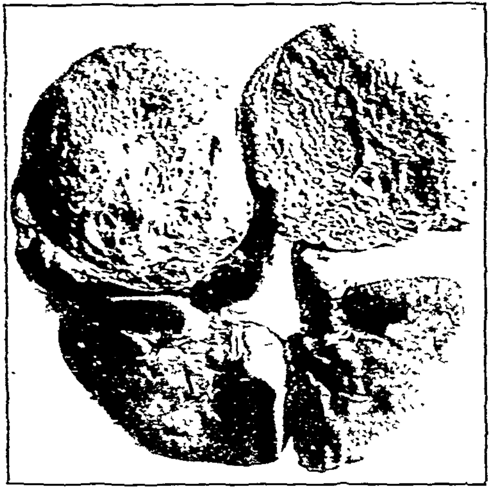

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I consider that these phenomena are due to the limitation of the field of consciousness in the hypnotic state, which may be explained as follows. If ten-tenths is the limited field of consciousness, when two-tenths is occupied with addition, there only remains eight-tenths for vision or audition, and as the addition proceeds and takes up more and more room in this limited field of consciousness, by the time eight-tenths of consciousness is occupied with addition, there only remains two-tenths for vision or audition, and therefore the sight or hearing is greatly reduced in power. The same applies to movement.

(II.) The most mentally alert thinker thinks in pictures, but as fatigue sets in he begins to think in terms of hearing, and later in terms of movement. In the limited hypnotic conscious state this is easily demonstrated. The subject is told to dream that he is a bank clerk adding up column after column of figures, of two or three figures in a row, and that he can either look through the columns of the figures in the book as he adds up, or he can listen to the (imaginary) person standing by him, who will also be calling out the figures, or that he can say them to himself to assist him in adding up. The actual figures are dictated. The results which are remarkably constant show that the person first sees the columns in the book, but as the calculations continue he begins to cease to see the columns of figures, but now hears the person nearby calling them out to him, and later ceases to hear him say them, so now has to resort to "say" them to himself. I call this the fatigue phenomenon, the types of thought running from visual to auditory, and then to kinæsthetic as the effort becomes greater.

(III.) The lower the intellectual standard of a person the greater is his difficulty in visualising during the hypnotic state; he often cannot visualise at all, and his mind becomes a "blank," although in the waking state he can visualise, he may not be able to imagine sound unless he can first visualise what produces the sound. In this type of person it is observed that the chest movements are greatly diminished during the hypnotic state.

RESPONSES IN MENTAL DISORDER

(IV.) A "complex" can be determined by the person refusing to accept the suggestion of the particular thing mentioned, such as the word river in one who contemplates or has attempted suicide. On cross-examination afterwards, which is the subjective method used for all the tests, the person does not remember dreaming of a river in this case, or only remembers after great effort and then with hesitation. Emotional reactions can likewise be noted.

(V.) During the waking state stammerers are mainly auditory thinkers, but during hypnosis they are visual thinkers, as determined by subjective cross-examination after hypnosis. The patients can easily picture a thing during the hypnotic state, but during the waking state they audit or hear sounds but do not pay much attention to visualisation. This suggests the reason for so many "cures" of stammering by "periods of silence" and the like, when the thought must become visual. It is common knowledge in alienistic circles that when a stammerer is in the hypnotic state he ceases to stammer.

(VI.) The manic-depressive or cycloid or extrovert types of mental make-up can easily be distinguished from the dementia præcox, or schizoid or introvert types, by noting their reaction to hypnosis, the extroverts never going quite so deep as the introverts, although often more easily hypnotised, and, vice versa, the introverts going deeper than the extroverts, although much more difficult to hypnotise at first. Further, the subjective examination also shows that the extroverts are more of the auditory type of thinkers, and the introverts are more of the visual type.

MEMORY, AUTO-HYPNOSIS, AND SLEEP

(VII.) There are three types of person as regards memory for what happened during the hypnotic state:—

1. He who remembers nothing whatsoever of the events during hypnosis, and has to be re-hypnotised in order to be cross-examined as to his subjective reactions.
2. He who remembers fragments of his dreams dictated and whose memory has to be assisted, perhaps even by re-hypnosis, for the isolated events.
3. He who remembers everything of what took place during hypnosis regarding the dictated thoughts, and does or does not have any recollection of outside events during this period, and certainly could not open his eyes, even when told to try to do so, after the suggestion has been made that he cannot.

(VIII.) It would appear that hypnosis is a dissociated state in which the higher centres are certainly more fully alert and the lower centres more asleep (Mr. A is awake, and Mr. B is asleep).

(IX.) An extensor plantar response (Babinski) is often obtained both in deep sleep and certainly in the fifth and sixth stages of Liébeault (the deep hypnosis where complete amnesia remains for the hypnosis), which in both cases is due to profound *inhibition of certain cortical functions*.

(X.) Gower's case of "half-waking somnambulism" might quite possibly have been one of auto-hypnosis of the third degree of Liébeault (the subject is also conscious of everything going on around him to a certain extent, and hears every word addressed to him, but he is oppressed by great sleepiness. An action communicated to a limb is automatically continued. If the arm is rotated to begin with, it goes on rotating until the operator directs its stoppage). The only two cases I have seen of narcolepsy strongly suggested a spontaneous self-hypnosis of the third degree, apart from being considered by some authorities as an "epileptic equivalent."

(XI.) It has been shown that sleep can occur without loss of consciousness, and loss of consciousness can occur without sleep. Is hypnosis then a particular and peculiar form of sleep? Fatigue is not necessary for either sleep or hypnosis. Fatigue might actually prevent sleep. Pavlov's theory would explain sleep and hypnosis as varieties of cortical inhibition. He states that the cortical elements are functionally exhausted with comparative ease, and speaks of a "*scattered sleep*" or sleep of separate groups of cellular structures. R. D. Gillespie refers to Richardson's drowsy subject in which greater mental effort actually sends the subject to sleep.

STAGES OF HYPNOSIS

(XII.) I still consider that Liébeault's classification is the best:—

Stage 1.—The patient feels a heaviness of the eyelids and a general drowsiness.

Stage 2.—Characterised by suggestive catalepsy. When the hypnotist places the arm in a certain position and says that it is to remain there, it is impossible for the patient to pull it down. The arm remains rigid and fixed for a much longer time than would be possible in the natural state. In the first and second degrees or stages, consciousness remains almost complete. and often the patient denies having been in the hypnotic state because he has heard and remembers every word which has been spoken to him. (A very large proportion of people never pass beyond this stage.

Stage 3.—The subject is also conscious of everything going on around him to a certain extent, and hears every word addressed to him. but he is oppressed by great sleepiness. An action communicated to a limb is automatically continued. If the arm is rotated to begin with. it goes on rotating until the operator directs its stoppage.

Stage 4.—The patient ceases to be in relation with the outer world. He hears only what is said to him by the hypnotist.

Stage 5.—Stage of somnambulism. when what has occurred during sleep is indistinct and recalled with difficulty.

Stage 6.—Stage of somnambulism. when the patient is unable to recall spontaneously anything which has occurred while asleep. All the phenomena of post-hypnotic suggestion can be induced in this stage.

Hypnotism is the production of a psychical condition in which the faculty of receiving impressions by suggestion and the power to act upon and carry out the suggestions made is greatly increased.

(I hope shortly to publish. with others. physiological records of some of these hypnotic states.)

London.

THREE FATAL CASES OF

PULMONARY EMBOLISM IN RELATION TO PREGNANCY

By John Beattie, F.R.C.S.Eng., M.C.O.G.

RESIDENT ASSISTANT PHYSICIAN ACCOUCHEUR,
ST. BARTHOLOMEW'S HOSPITAL

Sudden death without symptoms is rare in pregnancy, labour. or the puerperium; the cause is most often found to be a massive embolus obstructing one or both pulmonary arteries, with consequent asphyxia and heart failure. Because of the comparative rarity of this condition it is thought justifiable to publish a description of three cases which have been observed in St. Bartholomew's Hospital during the last ten years, out of a total of 3500 consecutive pregnancies which were cared for in the maternity department of the hospital during this period. The incidence at this hospital is therefore 0·08 per cent., but the figures are too small to be of much practical value. In other publications on this subject the incidence is given as 0·06 per cent. in 190.000 collected cases of pregnancy, but this figure is not constant. for Richter [1] gives the incidence as 0·12 per cent. in 16,000, and Devraigne [2] as 0·04 per cent. in 45,000 pregnancies.

Pulmonary embolism is extremely rare during pregnancy and in labour; the majority of cases which it complicates have reached the puerperium. Bunzel [3] in 32 cases found that 24 developed embolism in the puerperium, 6 in the first few months of pregnancy. and only 2 during labour. Of the three cases here described one was at the seventh month of pregnancy. one in the second stage of labour. and one on the seventeenth day of the puerperium.

Embolism may complicate pregnancy at any age in the childbearing period of life. but the incidence appears to be twice as high in primiparæ as in multiparæ, probably because operative interference in the delivery of the fœtus is. to a small extent, a predisposing factor. Bunzel and others have stated that pulmonary embolism, quite apart from air embolism, has been recorded in a comparatively high percentage of cases of Cæsarean section and after delivery with placenta prævia. In the puerperium embolism may take place at any time, but from a study of many published cases it seems to be most prevalent between the fifth and twelfth days.

The great veins of the lower extremities, especially the great saphenous vein and the deep femoral or common femoral veins, are the most common situations in which the thrombus is found. Only rarely is the primary thrombus found above the inguinal ligament. but a few cases have been reported in which the external iliac vein and the hypogastric vein were primarily involved (Laennec).[2] The last case here described, in which death occurred on the seventeenth day of the puerperium, was found to have a large thrombus in the left hypogastric vein from which the embolus had arisen, but this is a most unusual site; such a thrombosis would probably commence at the placental site, and must first spread through the tortuous and comparatively small veins of the uterine plexus before reaching the hypogastric or ovarian vessels. and it is only from the latter that a large thrombus could separate and produce a massive pulmonary embolism. One is quite familiar with cases in which showers of small infected emboli produce lung infarcts in cases of puerperal endometritis. but in such cases massive embolism is very rarely seen, and they appear to have quite a different ætiology from those of massive pulmonary embolism, for the primary focus of the thrombosis in the latter cases rarely shows evidence of an acute infective process.

PREDISPOSING FACTORS

The predisposing factors of pulmonary embolism when related to pregnancy are difficult to define. It is unlikely that the inguinal ligament plays any part in the process by its pressure upon the common femoral vein. Possibly ante-partum and post-partum hæmorrhage and reduced cardiac force predispose to it, but a study of the cases hitherto published does not produce evidence in favour of such a supposition. The three cases described in this contribution were all normal in this respect. and there is no evidence that any of them were suffering from a degree of anæmia.

Aschoff [4] has stated that the thrombosis is caused primarily by changes in the blood plasma. the elements of the blood and its rate of flow. the first step being a local collection of platelets along the vessel wall following a widening of its lumen and damage to the endothelial lining secondary to mechanical factors, and increase of the venous pulse, which tends to slow the blood stream in this area. This first step is followed by the deposition of further blood platelets until the flow of blood ceases altogether. and in this situation a white infarct is formed. It is from the red infarct which forms on the proximal side of the latter that the embolus separates. Aschoff describes a case in which the pulmonary embolus exactly fitted the femoral vein in which the primary thrombus arose. In one of the cases here described the pulmonary embolus showed a mark upon it, which corresponded to a valve in the femoral vein from which it had separated. Von Recklinghausen considered that abnormal eddies in the venous blood stream were a more important factor in the production of thrombosis and embolism than the actual mechanical slowing of the blood stream.

The incidence of pulmonary embolism in pregnancy is very low, and it is improbable that the presence of the pregnant uterus plays any particular part in the production of this complication, for the cases described in the literature do not appear to take place essentially in the patient who has severe varicose veins or even œdema due to pressure from mechanical factors.

The signs and symptoms of massive pulmonary embolism are well known ; there is often sudden pain, either in the præcordial region or posterior aspect of the chest, with cyanosis, dyspnœa, air-hunger, a raised pulse-rate of the "climbing" variety (Mahler's sign), and possibly also a cough and blood-stained sputum if death is delayed. In most cases there are one or two of these signs and symptoms. When death is immediate the patient either sits up suddenly or falls down dead with no previous symptoms except perhaps a gasping sigh.

TREATMENT

Treatment of those cases in which the embolus is lodged in the main branches of one or both pulmonary arteries is usually of no avail, and amounts to the administration of cardiac stimulants and the inhalation of amyl nitrite and oxygen. It seems practically impossible to discover during pregnancy the patients who are peculiarly liable to suffer from embolism either before or after the delivery of the child. Theoretically, treatment should be directed particularly towards women who are anæmic, by the administration of iron and arsenic and possibly by blood transfusion, especially in cases of ante-partum or post-partum hæmorrhage.

Some observers advise that for anæmic patients the foot of the bed should be kept permanently raised during the puerperium, and even that the legs should be bandaged from the ankle upwards with a spiral crêpe bandage, but the prophylactic value of such a procedure is certainly doubtful, and it is unjustifiable as a routine treatment.

Of the three cases described in this contribution, in one death followed a severe fall at the seventh month of pregnancy with the subsequent application of a plaster spica to one thigh. In the second case death occurred during the second stage of labour; antenatally, the patient had complained of a little pain over the site of the right deep femoral vein, and it was from this region that the embolus arose. Possibly, if this patient had been confined to bed for the last three months of her pregnancy the catastrophe might have been averted, but even this is doubtful. The last case described was one in which death occurred on the eighteenth day of an apparently quite normal puerperium, and there was nothing to indicate that there was any massive thrombosis in the pelvis while she was still an in-patient at the hospital, but post mortem a large breaking-down thrombus was found in the left hypogastric vein, and the placental site showed evidence of infection. The embolus apparently arose from the left hypogastric vein.

THREE CASE RECORDS.

CASE 1.—A woman, aged 28, was admitted to St. Bartholomew's Hospital in July, 1922. She had had two quite normal pregnancies, the last child being born in 1916. She was seven months' pregnant, and 14 days previously she had slipped and fallen heavily on her left side. She lost consciousness for half an hour, and afterwards walked up to the hospital, where she had the left femur radiographed. The appearances of the plate suggested that there was a flake of bone separated from the edge of the acetabulum, and she was therefore put up in a plaster spica, with the plaster in relation to the anterior abdominal wall well cut away to allow room for the pregnant uterus. Twelve days later, while at stool, she suddenly lost consciousness and became breathless and cyanosed, but without pain, cough, or sputum. Twelve hours later she was transferred to St. Bartholomew's, and she died 24 hours after admission.

On admission the patient was very cyanotic and breathless; the pulse-rate ranged from 110–130, but the pulse was hardly perceptible at the wrist. The heart sounds were feeble, but no enlargement was detected. The lungs were emphysematous with no added sounds, and no evidence of œdema at the bases. The blood count was quite normal. The urine contained a trace of albumin but was otherwise natural. On post-mortem examination two ante-mortem clots were discovered, the largest, 2½ in. long, in the left pulmonary artery, and the other one, 2 in. long, completely blocking the right pulmonary artery; one clot showed the mark of the vein in which it had formed. The left acetabulum was normal, but there was a partial subluxation of the left sacro-iliac joint with hæmorrhage between the joint surfaces. The pelvic veins were normal, and so also were the uterus and placental site.

A large ante-mortem clot was present in the common femoral vein of the left side, commencing at its junction with the profunda femoris and extending up to the common iliac vein of the same side, involving also the internal iliac vein.

CASE 2.—A woman, aged 30, was admitted to St. Bartholomew's Hospital for the delivery of her second child at full term in December, 1931. At the time of admission she was not in labour. She had had one previous pregnancy in 1927, and had had forceps delivery of a normal vertex presentation with no complication in the puerperium. Since April, 1928, she had been treated in the orthopædic department for spondylitis deformans, the whole spine being rigid, *with a marked kyphosis from the cervical region* to the second lumbar vertebra. The chest expansion was very limited.

During her second pregnancy she had first been seen eight weeks after the cessation of menstruation and again regularly each month. It was not until the seventh month that she complained of a tender area situated high up on the anterior surface of the right thigh, and in this region a small tender indurated plaque was palpable, and at the same time a little œdema around the right anke-joint was discovered. This condition improved during the next two months, and no treatment was adopted at the time. Throughout pregnancy the patient complained of dull pain in the spine, but she had suffered from this symptom since the onset of the spondylitis deformans in 1928. At term the presentation was a vertex with the fœtal head well engaged in the true pelvis; when admitted to hospital there was a little œdema around the right ankle-joint. The left leg was normal.

This patient went into labour and the first stage lasted seven hours. After two and a half hours she suddenly became breathless and slightly cyanosed, and the pulse-rate rose from 90 to 104 beats per minute. Otherwise there were no abnormal symptoms; she was not anxious or in any pain, and her mentality was quite normal. This condition lasted throughout the rest of the first stage of labour, and not until the fœtal head was actually on the perineum did she quietly die. Half an hour before death her pulse-rate rose rapidly until it became uncountable, but respiration was not greatly laboured; there was a considerable degree of cyanosis of the lips and cheeks.

The post-mortem findings were as follows: A large ante-mortem clot filled both pulmonary arteries; the lungs were extremely congested, and there was no evidence that *the embolism had occurred in two* or more stages; the clot filling the pulmonary arteries showed the mark of a valve from the vein in which it had first formed. The primary site of the thrombus was found to be in a branch of the profunda femoris vein of the right side, and from this region the clot had spread into the common femoral vein, completely filling its lumen. The placental site, uterine and ovarian veins were quite normal. The other organs of the body were normal on examination. The spinal column showed no gross anatomical changes.

CASE 3.—A woman, aged 34, was admitted to St. Bartholomew's Hospital in October, 1930, for delivery of her third child. She had had two previous pregnancies, both normal except for a small external, accidental hæmorrhage during the first. At the third pregnancy she was delivered of twins, both vertices, and had an uneventful labour and puerperium until discharge from hospital on the twelfth day. She showed no abnormal rise of pulse-rate or temperature during her stay in the hospital, nor was there any other evidence of an endometritis. On the seventeenth day after delivery she was walking in the street when she suddenly collapsed, and was immediately brought by ambulance to the hospital, where she died in a few minutes. At the time of admission she was greatly cyanosed and breathless, with uncountable pulse.

The post-mortem findings were: some hypertrophy of the left ventricle of the heart and thickening of the tricuspid valves, with a large ante-mortem clot in both main branches of the pulmonary arteries, completely occluding them. Both lungs were greatly congested, and there was some mucopus in the lesser bronchi. The great veins of the lower extremities were quite normal. The placental site showed evidence of an infection. The uterus itself was bulky and soft, and there was a small piece of adherent placenta at the fundus. In the left uterine and hypogastric vein was a large breaking-down thrombus, and there was a small ante-mortem clot in the radicle of the left ovarian vein. The embolus had arisen from the left hypogastric vein.

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Clinical and Laboratory Notes

RUPTURED COLON SACCULUS IN SISTERS

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Rupture of a colon sacculus in two closely related members of the same family is rare. I cannot claim to have made any exhaustive search, but a limited inquiry fails to disclose another record of it.

The cases recorded below are those of two sisters, and they were both aged 54 at the time of the happening. In each instance the affected portion of the intestine was the pelvic colon, while the symptoms and signs simulated perforation of the vermiform appendix with transposition of the viscera. In neither case could further sacculi be found. Both patients made an uninterrupted recovery, although the elder sister had a perforated vermiform appendix with abscess 15 months later, for which I successfully operated.

Case 1.—Miss M. F., aged 54, on Dec. 27th, 1927, complained of pain in the right side of the abdomen. The pain did not become really acute until two days later when she sent for her doctor. On the following day the symptoms became more pronounced and Dr. T. W. Hay, of Newcastle-on-Tyne, invited me to see her. I first examined her at 4 P.M. on Dec. 30th, when the physical signs were those of a perforated appendix, situated in the pelvis in a patient with *transposition* of the viscera—*i.e.*, there was marked rigidity and tenderness in the hypogastrium more pronounced in the left side. Her temperature was 100·6 °F., while the pulse-rate was 110 per minute. The heart and liver were in their *normal situations.* A white cell blood count showed a well-marked *leucocytosis.* She was removed to a private hospital and operated on at 10 P.M. the same day, through a muscle-cutting incision over the left iliac fossa. A ruptured sacculus at the middle of the pelvic colon was found, with a stercolith ¾ in. × ¼ in. lying free on the pelvic floor; there was accompanying pelvic peritonitis with no attempt at localisation of the mischief. The perforation was closed with interrupted catgut sutures and the closure reinforced by anchoring adjacent appendices epiploicæ over the site. The area was drained and she made an uneventful recovery. No other saccules could be found.

In March, 1929, she was readmitted with a perforated appendix with abscess. The appendix was removed and the abscess drained. She made a good recovery.

Case 2.—Miss D. F., aged 54 (sister of the above), was seized with pain in the left side of the abdomen on March 1st, 1932. The pain was not acute at first, but a tender swelling appeared in the left flank. For three months previous to this she states that she could not bear any pressure on the left side of her abdomen, but thought it had something to do with her chronic spinal condition. She has worn a splint for immobilisation of the vertebral column for some years. I saw her in consultation with Dr. Hay that night. She then had a rounded swelling the size of a hen's egg, in the left side of the abdomen, at the level of the outer side of the middle of the descending colon. There was no rigidity of the overlying muscles. Her temperature was 102·6° F. There had been no vomiting.

She was removed to a private hospital for observation. Her urine was normal chemically and microscopically. A barium enema was employed as an aid to diagnosis but a normal radiogram was obtained. In the first 48 hours after admission the pain gradually increased in severity, coming on in spasms and the swelling became more tender. There was still no muscle-guarding and the temperature persisted at the same level. Except for the absence of vomiting, the signs and symptoms were very suggestive of acute appendicitis occurring on the left side. The viscera, however, were not transposed.

On the evening of March 3rd the pain became suddenly more pronounced, and for the first time rigidity appeared over the swelling. Immediate operation was decided upon. At the operation two loops of a very long pelvic portion of the colon were found bound together by recent adhesions enclosing a small collection of thick offensive pus. In the midst of these adhesions there was a perforated sacculus of the colon. A small hard stercolith lay loose in the cavity. The pus and stercolith being removed, the perforation was closed by interrupted sutures of catgut and an india-rubber tissue drain was placed near the site. There was no evidence of any further sacculi. Recovery was uneventful.

Both patients are now well and free from all abdominal symptoms.

NOTE ON A STABLE SUSPENSION OF DIBENZANTHRACENE IN WATER

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In 1930 Kennaway[1] and Hieger[2] discovered that a pure aromatic hydrocarbon—1:2:5:6-dibenzanthracene—is capable of producing epithelial tumours in mice when a solution in benzene is applied repeatedly to the skin. An investigation into the action of this substance when injected into the animal body is a natural sequence. This method would permit the study of tumour induction at the site of injection in different regions of the body, and could further be used in attempting to sensitise the animal as a whole to the carcinogenic action of non-specific irritants.

At first, suspensions of dibenzanthracene in lard, olive oil, and other fatty media were tested subcutaneously in mice and rats (Burrows, Hieger, and Kennaway[3]), resulting in the development of spindle-cell sarcomata at the site of injection. More recently Burrows[4] was able to produce similar tumours in rats by repeated intraperitoneal injections of a solution of dibenzanthracene in olive oil emulsified in 5 per cent. gum acacia.

Unfortunately, the use of fats in the preparation of these mixtures, especially when heat is necessary to facilitate solution, introduces the possibility of certain fallacies, which have been discussed in the communications mentioned above. Further difficulties arise if the intravenous method of injection is contemplated. All these difficulties could be overcome, however, if a colloidal solution of dibenzanthracene in water could be prepared.

I have devised a method of preparing a stable suspension which should answer the purpose, using white crystalline 1:2:5:6-dibenzanthracene, purified by the method described by Cook.[5] 10 c.cm. of a 0·1 per cent. solution of this compound in pyridine is added drop by drop from a burette to 90 c.cm. of distilled water, the mixture being stirred throughout the process. The opalescent solution, thus produced, is then poured into collodion sacs and dialysed against water for two or three days until all the pyridine has been removed. If carefully prepared, a relatively stable colloidal solution is obtained, which may be boiled for a short time with safety. It tends to precipitate when saline is added, but is fairly stable in the presence of serum. It can be prepared in a more concentrated form by slowly adding 20 c.cm. of a 0·2 per cent. solution of dibenzanthracene in pyridine to 80 c.cm. of a 6 per cent. solution of gum acacia, and then dialysing for several days against water. This produces a stable suspension, four times the concentration of that prepared by the first method, and is probably the more suitable for injection experiments.

I have pleasure in recording my indebtedness to Dr. A. Wormall for his valuable suggestions.

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COLLOIDAL SOLUTIONS OF 1 : 2 : 5 : 6-DIBENZANTHRACENE

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Dr. Berenblum has been kind enough to show me the above note in manuscript. Under the circumstances it was thought advisable to communicate the experience obtained in this laboratory in the matter, although we had not intended to do this until the results of biological experiments with the material were forthcoming.

The production of sarcomata by the injection of solutions in lard and in olive oil emulsions of 1 : 2 : 5 : 6-dibenzanthracene, has been described by Burrows, Hieger, and Kennaway,[1] and by Burrows.[2] Mr. Burrows is now testing the possibility of producing tumours by injection of aqueous colloidal solutions of hydrocarbons containing no fatty solvent.

The solution is made by dissolving 0·3 g. purified 1 : 2 : 5 : 6-dibenzanthracene in 100 c.cm. acetone which has been dried over anhydrous Na_2SO_4 and redistilled. A solution of 0·5 per cent. leaf gelatin in distilled water is prepared by warming the gelatin in water on the water bath. One part of the acetone solution is poured into ten parts of warm (40–50° C.) gelatin solution with rapid stirring. The opalescent liquid is then boiled until the acetone is removed. The solution so obtained is stable for long periods, apparently at all temperatures. It can be sterilised by boiling, and a solution which has stood in the laboratory for three months has not produced any precipitate.

Colloidal solutions of lower concentration can be produced if the acetone solution of the hydrocarbon is poured into water. Gelatin was used as protective colloid to allow a greater concentration. The colloidal solution in water without protective colloid is very stable to heat and electrolytes. The particles of hydrocarbon have a negative charge, which might be explained by the dissociation of hydrogen ions from the hydrocarbon molecules. Some other hydrocarbons, such as anthracene, naphthacene, acenaphthene, and 1 : 2 : 5 : 6-dibenzphenazine—a substance with a molecule of similar shape to that of 1 : 2 : 5 : 6-dibenzanthracene—do not form colloidal solutions so easily in this way. 1 : 2-benzanthracene, chrysene, and dihydroanthracene do form colloidal solutions. It is possible that this ability to form colloidal solutions is necessary for carcinogenic activity, in that it would allow the material to penetrate into the cells. But the relative efficacy of aqueous and fatty emulsions in this respect remains to be decided.

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[1] Amer. Jour. Cancer, 1932, xvi., 57.
[2] Proc. Roy. Soc. B., 1932, cxi., 238.

CONFUSIONAL INSANITY FROM PSYCHIC SHOCK

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The early differentiation by Meynert[1] and Chaslin[2] of a type of insanity marked by confusion, with restlessness and disorientation, and very often eminently curable, has been followed by numerous descriptions of the possible factors in the production of such a psychosis. It has been shown that focal infection, cardiorenal degeneration, malnutrition, puerperal toxæmia, anæmia, glandular dysfunction (especially of the thyroid), and many other disorders may each be the chief cause of this kind of mental breakdown.

The importance of emotional factors such as domestic and economic stress, worry, fear, and anxiety has also been frequently pointed out, and cases have been recorded where some totally unexpected situation has seemed to precipitate a psychosis of purely psychogenic origin. Such cases have been described by Féré, Séglas and Barat, Hesnard, Stierlin, and others,[3] but examples of purely psychogenic psychoses of a confusional type have been sufficiently rare to warrant the recording of the following case.

Mrs. A., aged 49, had a serious love affair when a young woman; but her lover left for London and she heard nothing of him for more than two years. She gave up hope of seeing him again and married elsewhere. Later the lover returned, too late, and some time afterwards he also married. She saw no more of him for over 20 years, but after this, by a coincidence, it happened that the two families came to live comparatively near each other, and at this time the patient had a grown-up son and her former lover a grown-up daughter. The woman had always regretted her early marriage and her buried love found new life and happiness when the two young people fell violently in love. This happy state continued for some time, but eventually a rift occurred in the love lute of the young people which led to an acrimonious quarrel between the girl and her father on the one hand, and the son on the other. The first intimation the patient received of this unfortunate break was a bitter and hostile letter from her old lover, and the effect was the immediate precipitation of a psychosis. She became acutely anxious and restless, exhibited depression with much emotion, and heard hallucinatory messages telling her that her son was in great danger. Confusion with disorientation rapidly developed and she was certified and sent to hospital in two days.

With mild sedatives, simple persuasion, and sleep in an open verandah she rapidly regained stability and control and was discharged quite well in 35 days. Twelve months later she was still in very good health.

During her stay in hospital nothing abnormal was found on physical examination. The blood pressure at first was 125/82, the pulse-rate 80, later it rose to 140/90 and the pulse-rate became a little slower. The patient was successively examined by a gynæcological surgeon, an ear, nose, and throat surgeon, and by a dentist, and although the last extracted a few teeth no possible ætiological factor was found nor was any septic focus discovered at any time. The Wassermann reaction was negative in the blood and cerebro-spinal fluid, and the colloidal gold curve and cell count of the latter were normal.

The urine showed a trace of albumin in one specimen and a trace of indican in another, but was otherwise found free from all abnormality on several occasions. A urea-concentration test was quite satisfactory and the blood-urea on the second day was 35 mg. per 100 c.cm.; on the thirty-fourth day it was 34 mg. A fractional test-meal gave figures within normal limits.

A blood-sugar curve obtained on the fifteenth day gave a fasting level of 95 mg. per 100 c.cm., and after 1, 2, and 3 hours the blood-sugar levels were 170, 180, and 145 mg. respectively. In the absence of any organic disease this delayed return to normal, giving a hyperglycæmic index of 100, supports the emotional tension theory of McCowan and Quastel [4] and the only other abnormality discovered—namely, the excretion of only 7 oz. of urine in three hours after the ingestion of 1 pint of water on an empty stomach (water-excretion test of Strauss-Graunwald [5]) is probably explained by a similar mechanism. This test was carried out on the fourth day, and the same test repeated on the thirtieth day gave a result of 15 oz.

I wish to thank Dr. A. T. W. Forrester, medical superintendent, Warwick County Mental Hospital, for his permission to publish the notes of this case.

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MEDICAL SOCIETIES

HARVEIAN SOCIETY OF LONDON

AT a meeting of this society on Nov. 9th, with Mr. C. P. G. WAKELEY in the chair, Prof. GREY TURNER delivered an address entitled

"Nil Desperandum"

illustrated by lantern slides. His intention, he said, was to show some surgical cases which might well have been viewed with despair, but in which surgical intervention had turned out to be fully justified.

1. A miner, aged 32, had come under observation at the end of 1931. At that time he was thought to be dying from intestinal obstruction due to a secondary deposit of malignant growth. He had a sarcoma of the suprascapular region which had been twice removed and once treated by radium, but which had recurred each time, and was suffering from severe pain and vomiting; the surgeon who was attending him thought that there were signs of secondary deposits in the chest, and that another deposit was responsible for his abdominal symptoms. Prof. Grey Turner, who was consulted, agreed with this view but was unwilling to let the patient die in such misery. Operation was undertaken, and when the abdomen was opened a chronic intussusception was found. The bowel tore during an attempt at reduction, and the apex of the intussusception was found to be a polypoid mass, which on subsequent section proved to be non-malignant. The patient was so ill that the involved loop of bowel was merely pulled out of the hole, and a lateral anastomosis made; he did fairly well, however, and the loop was subsequently cut off with the cautery, the two ends having been ligatured below the anastomosis. A fæcal fistula developed, which had to be closed later by operation, and the patient then said: "What about this lump on my shoulder?" No signs of secondary deposits could then be found in the chest, so the tumour was widely resected. The patient had made a complete recovery and was now back at work.

2. A girl of 19 had had gastric symptoms for three years which culminated in the perforation of an ulcer of the lesser curve. Operation for this emergency was performed in 1910, the ulcer was closed, a posterior anastomosis made, and the pelvis drained. Later, the patient married, and two years afterwards was confined with her first child. Labour began on a Sunday morning, and as everything seemed to be straightforward, her doctor left her for several hours and returned at 9 o'clock in the evening. He then found her in a state of severe shock. Prof. Grey Turner was consulted; the patient's abdomen was opened at once, in her own home, and Cæsarean section carried out as a preliminary measure; unfortunately the child was dead. Blood-stained fluid was present in the abdomen, and when the child had been removed it was possible to see that a large part of the small intestine was black and beyond hope of recovery, owing to thrombosis of mesenteric vessels. The damaged portion of gut was excised, and an end-to-end anastomosis carried out. In spite of a high temperature and an abscess at the site of a saline injection given by the nurse, the patient made a gradual recovery and three years later was delivered of a healthy child.

If perforated gastric ulcers could be operated upon early enough it should be possible to do a large number with a very low mortality. Every effort should be made to reduce the mortality by aiming at closer coöperation between the surgeon and the general practitioner.

3. A patient had had a history of recurrent ulcers. He was operated upon at the age of 13 for ulcer of the anterior stomach wall, at 16 for ulcer of the posterior wall, and again at 17 for an indurated ulcer of the anterior wall in front of the hilus of the spleen. Twenty-one days after this third operation he had an acute attack of pain. The abdomen was opened, and it was found that a perisplenic abscess had ruptured into the peritoneal cavity. The abdomen was swabbed out, and an anterior gastro-enterostomy performed; 29 days later the patient had acute intestinal obstruction from a band, and that too was put right. He recovered and served throughout the war in good health. Since the war he had had two attacks of obstruction which had recovered without operation, and one attack of hæmatemesis, but he was now perfectly well.

4. A farmer, aged 77, ruptured a duodenal ulcer, and was operated on in his home. A Keith's tube was put into the pelvis, and a few days later a large mass of intestine escaped through the suprapubic opening; this was returned to the abdomen, a tear in the gut being repaired hastily, and the wound was closed. The opinion of an elderly female relative that "he was too wicked to die" proved to be correct. Three years later he had an acute attack of osteomyelitis from a site in the tibia which had lain dormant since he was 10 years old. He survived that, and died at the age of 83 from mild cardiac degeneration.

The mortality-rate of operation for the radical cure of simple hernia was less than 1 per cent., but for strangulated hernia the operative mortality was 18 to 20 per cent. All patients with vomiting and abdominal pain should be examined for hernia; a small swelling in the groin of a fat woman was easily missed, but it was important to make a diagnosis and to operate; when anything at all went wrong with a hernia operation should always be performed. Strangulation might be at the hole in the peritoneum, not at the hole in the abdominal wall. Patients might get attacks of strangulation which they were able to reduce themselves; then came an occasion when they reduced the hernia into the cellular tissue instead of into the abdomen, and symptoms of obstruction persisted. Fæcal vomiting ought to be eliminated from text-books as a sign of intestinal obstruction; it was a sign not only of obstruction but of approaching death, and the diagnosis ought to have been made long before it appeared.

5. In a patient, on whom two operations had been performed for recurring volvulus, the adhesions, developing after the second operation, were so strong that complete resection of the colon became necessary; in spite of the development of a fæcal fistula which had to be closed, the patient made a complete recovery, and 24 years after the operation was still well.

Gall-stone ileus was a condition which must be borne in mind as a cause of intestinal obstruction. The symptoms were early and copious vomiting which soon became intestinal; there was usually incomplete obstruction in the early stages, the patient often passing a motion, and there were marked periods of intermission; the maturation of the recurring symptoms, however, was very rapid. It was extremely important to see the vomit. He described two cases of the kind, in one of which the remission of symptoms was so marked that the patient was unwilling to go into hospital for observation; fortunately she stayed overnight, when a severe attack developed and operation was performed.

Cases of peritonitis which at operation appeared to have no obvious cause were generally due to the leaking of a perforation, which must be carefully sought. He was convinced that phlegmonous enteritis ought to be treated by resection of the affected gut. He had treated many cases of ectopia by transplantation of the ureters into the rectum, and showed a slide of a patient in whom he had transplanted the ureters into the sigmoid 20 years before. The patient was perfectly well and comfortable, and could go for eight hours without emptying the rectum. Another patient, a woman with epispadias, in whom he had performed this operation, had subsequently married and given birth to two healthy children. Radiography showed that in these cases there was a condition of natural symphysiotomy, so that labour was particularly easy. There appeared to be no disability associated with the bony condition; one boy with an extremely wide gap, anteriorly between the pubic bones, was able to play football.

Prof. Grey Turner had performed plastic operations for hydronephrosis, and if there was no pre-existing infection the patients did well. This operation had proved particularly valuable in the case of a girl who had only one functioning kidney, and that hydronephrotic. Wheelhouse's operation was useful in cases of stricture, but many surgeons lacked the patience to do it. Before undertaking it, a sound night's rest and a good breakfast were needed. For rupture of the urethra a local operation was often successful; the roof and sides should be stitched and the floor left open. It was never too late to deal with a urethral stricture; he had performed Wheelhouse's operation with success on a case which had had a suprapubic fistula for 15 years. Surgeons were now getting better results with epispadias and hypospadias, and we must not regard such cases as hopeless. He described a case in which stricture of the œsophagus in a boy had been treated by making a vertical incision through the œsophageal wall at the level of the stricture, and stitching it together again transversely. If necessary, an œsopho-gastrostomy could be performed in such cases. The surgery of cancer was full of encouraging results, and if there was no certain dissemination of growth the patient ought always to be given the chance which an operation offered. He described cases in which wide resections of intestine and complete gastrectomies had resulted in a new lease of life for the patients. Gross surgical treatment ought to be followed up by supplementary treatment; he believed in the value of Coley's fluid as a prophylactic in sarcoma, and in selenide of lead in carcinoma. In nerve surgery, injuries occurring at all ages ought not to be classed together; in young people, where the nerves were growing, the results were much better than in older people. Nerve anastomosis might lead to some recovery of function even if the nerve-ends had been left divided for some years. The work of surgeons went to show that few injuries were too terrible to be recovered from, and we must never lose hope.

A vote of thanks to Prof. Grey Turner was proposed by Mr. Gordon Taylor, and seconded by Dr. G. de Bec Turtle.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

At a meeting of this society in London on Nov. 10th, with Prof. W. Langdon Brown, the President, in the chair, a paper on

Psychology in Gynæcological and Obstetric Practice

was read by Dr. J. S. Fairbairn. One of the outstanding needs of medical practice at the present time, he said, was its infusion with the tenets of psychological medicine. To see any case in correct perspective the patient must be regarded as an individual with a mind as well as a body. Recent increase in the knowledge of pathology, with its accurate classification of the processes of disease, had led, however, to a concentration on the disease and a decrease in the consideration given to the personality of the patient. Gynæcological practice illustrated the dangers arising from this attitude; over-operation, for example, had taken place because the bodily condition alone had been considered and the mind ignored. Mental states, however, such as fear, or lack of confidence or self-control, were the most common causes of disordered action of the uterus in the otherwise normal patient, and they affected lactation even more obviously, so that the nervous woman is always regarded as a poor nurse. The unwilling mother was a hopeless problem; some enthusiasm must be roused to obtain even moderate success.

Disorders of menstruation might have a local pelvic, a general constitutional—e.g., metabolic—or a psychical cause, or all three might have a share in producing the disturbance. They were therefore especially instructive instances of the need for the thorough investigation of the patient as a human being with social relations—something more than an anatomical specimen of mankind. Dysmenorrhœa was largely mental in origin. Dissatisfaction with the feminine rôle might play a part, but the suggestion of menstruation as an illness, and its usefulness as an excuse for failure or the avoidance of doing what is uncongenial, satisfied him as an explanation for most cases. Dyspareunia seemed to be largely a defence against pregnancy.

The abdomino-pelvic ailing woman, with a degree of disability difficult to correlate with the physical condition, formed an extraordinarily difficult problem, and was very commonly encountered. Dr. Fairbairn believed that operation for the abdominal or pelvic laxity so often present was advisable only if it would make a change so material as to be obvious to the patient.

Dr. Fairbairn gave fatigue an important place, or what (as a diagnosis for his students) he called the "tired mother." This name applied to women socially above the hospital class, who, being unable to afford domestic help, devoted themselves to the maintenance of the respectability and credit of the family. The husbands characteristically exhibited the same love of respectability, but were also very ununderstanding.

Dr. F. M. Edwards touched upon the stresses which may produce dysmenorrhœa; she cited a case in which profuse periods coincided with the possibility of marriage, and another where the same symptom had a definite symbolic value.—Dr. H. C. Squires remarked that similar reactions to stress occurred in white, black, and brown people. Women in the East had particular difficulties.—Dr. T. LAWSON pointed out that just as an infant wishes to compensate for inferiority, so does an adult. The irrationality of disease is explained by considering the line along which he is acting. He regarded dysmenorrhœa as a masculine protest, and he suggested that the "tired mother" can be explained by the wish for appreciation.—Dr. H. C. WOODCOCK said that Adler's view that marriage is a task for two people suggested that premarital as well as prenatal instruction should be undertaken.—Dr. F. G. CROOKSHANK pointed out that behind the definite symptoms a problem was always present which must be dealt with. The neurotic reaction was determined by the person's life style, and the organ inferiority which was relevant.—The PRESIDENT also spoke of the importance of organ inferiority.

Dr. FAIRBAIRN said in reply that the symptoms of the "tired mother" was an indication that she recognised her poor position. He said that he had had a case similar to those which Dr. Edwards had mentioned. Irregular hæmorrhage occurred after a secret marriage, and ceased when the patient made her marriage known.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

AT a meeting of this society held in Liverpool on Oct. 28th, Dr. E. A. GERRARD (Manchester) read a paper on

Epithelioma Vulvæ in Cotton-spinners

While many writers had suggested possible factors in the causation of epithelioma vulvæ—e.g., leukoplakia vulvæ, syphilis, and trauma—no one, he said, had made any observations on the true underlying cause except to suggest that it was some form of chronic irritation. He had inquired into the occupations of 373 patients suffering from this condition, and of 101 cases in which a full history was obtained 59 per cent. were found to be working, or to have worked, as cotton operatives. Of all women over 20 years old admitted to two representative hospitals, the percentage of cotton operatives was only 28. An attempt was made to establish the influence of mineral lubricating oil as a causal factor, in view of the known effect of this substance among male cotton-spinners, and certain facts were elicited. In the case of cotton-spinners the air of the mill contains oily fluff and the spinners' hands are always oily. In the case of weavers the hands are oily and the act of sweeping the looms with an oily brush, sometimes in a squatting position, suggests the possibility of transference of oil to the external genitalia. Investigation of the occupation of 27 husbands of women who had not worked as operatives showed that in 10 there was a possibility that oil might be a causal factor. A further investigation of cases in a Yorkshire town showed that 73 per cent. of those suffering from epithelioma vulvæ were woollen operatives and ex-operatives.

Trichomonas Vaginalis

Mr. PERCY MALPAS reported that he had investigated 100 consecutive gynæcological cases and had found trichomonads in 11, though only in 4 were they present in large numbers. They were found in 36 per cent. of the cases of leucorrhœa. He described the method of detecting trichomonads by examining discharge, mixed with normal saline on a slide, using a $\frac{1}{6}$ in. objective. The typical appearances were the refractility and characteristic movements. The discharge in cases of heavy infection was foaming and resembled cuckoo-spit, while mucus was absent. The trichomonads could only be cultured for a few days, because of the presence of a heavy bacterial infection. On the disputed question of the pathogenicity of the organism, he mentioned three propositions:

(1) That the *Trichomonas vaginalis* is the prime cause of some cases of vaginitis. Against this contention are the facts that in cases of leucorrhœa, the trichomonads are never found except in conjunction with bacterial infection, and further, that the organisms may be found accidentally in enormous numbers in cases with little discharge and no symptoms.

(2) That the trichomonas is a harmless saphrophyte.

(3) That the organisms may so modify the discharge as to aggravate the symptoms.

Mr. Malpas favoured this last view. No form of treatment, he said, appeared to be specific, for although the organisms could be easily destroyed by simple antiseptic measures, they often reappeared.

Mr. W. W. KING (Sheffield) had found that the discharge when this infection was present varied greatly and might be almost absent, and he agreed as to the absence of mucus. He mentioned as diagnostic points the facts that the introitus vaginæ and vaginal walls might be spotted with small red and shiny areas ("strawberry vagina") and that the rugæ were swollen.

Mr. King showed a specimen of ruptured tubal pregnancy in an accessory tube, and Mr. R. WATSON (Liverpool) described a case of prolapse of a pregnant uterus through a tear in the posterior vaginal fornix, in a 5-para, aged 41.

Mr. WILLIAM GOUGH (Leeds) recorded a case of congenital defect leading to fæcal impaction.

The patient was a girl, aged 17, whose general health was good but who had an abdominal swelling as big as a full-term pregnancy. Vulval examination showed the anterior part to be normal and the hymen unruptured. The fossa navicularis was deep and behind the hymen was a small orifice, only large enough to admit a lead pencil, from which liquid fæces could be seen escaping. After enlarging the opening by incision several pounds of solid fæces were removed and the intestines were emptied in three weeks.

An attempt was then made to form a sphincter by an operation similar to the repair of a complete perineal tear, using the two halves of a transverse bar of fibrous and muscular tissue that was palpable immediately behind the orifice.

LIVERPOOL MEDICAL INSTITUTION

AT a meeting of this institution on Nov. 3rd, with Prof. R. E. KELLY, the President, in the chair, a paper on

Surgery of the Lung and Pleura

was read by Mr. HUGH REID. Tuberculosis of the lungs, he said, healed by fibrous encapsulation. The most important factor in healing was individual resistance, and the next was functional rest of the diseased part. It was the object of the thoracic surgeon to bring about functional rest, and the three main factors with which he had to contend were: the elastic pull of the lung itself; the bony thorax, also constantly moving; and the muscle pull of the diaphragm. Artificial pneumothorax alone, by allowing the lung to collapse, was extraordinarily useful, and would arrest the progress of active spreading tuberculosis when every other conservative method had failed. But there were various difficulties, dangers, and complications of artificial pneumothorax. Thoracoplasty was often the only logical means of attempting to bring about functional rest. Phrenic avulsion had a wide range of usefulness, both in itself, as a preliminary to some other procedure, and for the relief of symptoms.

Dr. Dennison Pickering said that, in considering surgical treatment of the lungs and pleura from the point of view of a private sanatorium, two questions must be answered—whether and when? Whereas some physicians deprecated any surgical measures at all, others would adopt them, without delay, wherever possible. Dr. Pickering advocated an intermediate course; a reasonable time should be allowed for conservative treatment before proceeding to surgical measures. Hæmorrhage might compel interference, while the presence of cavities, or recurrent pleurisy, would suggest the inadvisability of losing time. It was important to avoid the mistake of spending three or four months on conservative treatment, only to find the patient too weak to undergo operative treatment which at an earlier stage might have been successful.

Dr. Robert Coope said that cavitation in a lung, at whatever stage of the disease, should call for very careful consideration of the various methods of treatment which might be to the patient's advantage. It was a responsible matter to select the right case for collapse treatment, and to advise the best form of obtaining collapse; from the very start physician, surgeon, and radiologist should have their thoughts on the particular case. Artificial pneumothorax, simple in its technique, was not quite so straightforward in its results; even in cases apparently ideal for it, disappointment might come from unexpected pleural adhesions, the development of pleural effusion with its consequences, or the onset of contralateral phthisis. Taking the field of phthisis as a whole, he thought it would be found that phrenic paralysis had a much wider usefulness; sometimes for direct collapse, often also for the relief of troublesome symptoms. It appeared to be as useful in apical as in basal disease.

Dr. Henry Cohen drew attention to the digestive discomforts which sometimes follow left phrenicotomy. These he attributed to interference with gastric motility resulting from paralysis of the diaphragm. He emphasised that unilateral phrenicotomy was not without danger if emphysema developed.

Dr. B. T. J. Glover spoke of the need for further effort on the part of the physician to prevent the advanced and distressing conditions which needed surgical intervention. He said that an allergic state resulted from the liberation of tuberculo-protein as the result of the death and disintegration of tubercle bacilli. Once this hypersensitiveness to tuberculin had been established, and unless it waned, allergic inflammation with tissue destruction took place at the periphery of the tuberculous lesions. This interference with the repair process resulted in continuously spreading disease. Instead of using tuberculin for the stimulation of perifocal inflammation, as was done formerly, it should be used for desensitisation purposes in the hope that the removal of hypersensitiveness would allow repair.

Warmed Anæsthetics

Dr. R. J. Minnit said he thought the heat loss during anæsthesia was largely caused by the inhalation of a vapour, which at the intake was below the temperature of the surrounding atmosphere, when at the same time the heat-regulating mechanism was interfered with by the action of the anæsthetic itself. He had devised a piece of apparatus for attachment to the McKesson machine for the purpose of heating gas and oxygen with or without ether. It consisted of two copper vessels, one inside the other, with copper fins connecting them so as to obstruct the circuit of the space between the vessels. The approximate distance the gases had to travel from the inlet to the outlet was 10 ft., and they were heated by boiling water placed in the container. An experiment undertaken at room temperature showed that the temperature of the vapour at the output of the heater was 120° F., and that it fell to 80° F. at a distance of 3 ft. of tubing. Without the heater, under the same conditions, it was 45° F. The apparatus could be used with either face-mask or intratracheal attachment, and the gases could be delivered at any temperature desired, according to the length of the delivery tube. Its advantages were that induction was more rapid and pleasant; a larger percentage of oxygen could be given in the mixture, so limiting cyanosis; and less ether need be used. Operative shock was diminished, and post-anæsthetic vomiting and chest complications were decreased.

Dr. A. A. Gemmell reported a case of carcinoma of the body of the uterus, in which the only symptom over a period of ten months was a watery vaginal discharge, so profuse that it was mistaken for urine.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION

At a meeting held on Oct. 25th Prof. Lucas Keene delivered her presidential address entitled

Anatomy, Now and Then

She began by showing photographs of sculptures of very early date, and drew attention to the fact that an artist who renders the human form in true anatomical detail is an anatomist, however unwitting or unscientific. She deprecated any attempt to draw definite conclusions as to the state of anatomical knowledge from the anatomy depicted by any small group of works of art of a period, showing by photographs that wrong conclusions would necessarily be drawn were the state of present-day anatomy judged by the anatomy of figures sculptured by a certain well-known artist. She sketched the work and achievements of the greatest of anatomists through the ages, and gave some excerpts from recent work to show that the modern trend of anatomical thought is not entirely divorced from practical medicine. She concluded by expressing appreciation of the honour of election to the presidential chair, realising that in asking an anatomist to preside over their meetings they did so in recognition of the debt owed by medicine to the great anatomists of old.

Royal East Sussex Hospital.—On Nov. 2nd Princess Alice Countess of Athlone paid a visit to Hastings to receive purses; nearly £1200 has been collected for the new nurses' home. The new home is the last of the four projects which were outlined in an appeal launched in 1928: the reduction of a bank overdraft, the erection of orthopædic and isolation wards, the equipment of the children's ward and the erection of a sunshine ward have already been carried out. Princess Alice also unveiled a plaque commemorating the acquisition of the grounds which the governors have secured as the site for the home. The work of reconstruction will be done in convenient stages.

REVIEWS AND NOTICES OF BOOKS

The Extra Pharmacopœia of Martindale and Westcott

Revised by W. HARRISON MARTINDALE, Ph.D., Ph.Ch., F.C.S. Twentieth edition. Vol. I. London: H. K. Lewis and Co., Ltd. 1932. Pp. 1216. 28*s*.

AN official Pharmacopœia must be conservative in its outlook, refusing to admit to its pages new drugs the efficacy of which is not completely established. In the intervals between the production of successive Pharmacopœias, it is important that there should be some volume which will give information regarding the trend of therapeutic measures, and will help to crystallize opinions on the action and uses of drugs. The Extra Pharmacopœia of Martindale and Westcott has worthily filled that rôle for the past half century, and is so well known to the profession that it is almost unnecessary to do more than draw attention to the fact that a new and up-to-date edition is now available. It contains more information on all aspects of drugs than any book of its kind; the labour of compiling it must have been enormous. Official and non-official drugs, special preparations, many of which are unknown to all but a few of the profession, are arranged in alphabetical order, and a comprehensive summary of the latest information derived from the ward and the laboratory is given.

It is impossible, of course, for the author to adopt a dogmatic attitude towards the claims made for every new preparation put on the market, and the work might therefore be assailed on the ground that it is uncritical. Chapter and verse are given, however, for most of the statements made, and the reader can always refer to the original literature and draw his own conclusions. The new edition has been thoroughly revised to bring it into line with the advances in chemistry and therapeutics during the past four years. To mention only a few of the notable changes: the coal-tar derivatives now include phenylhydrazine, used in certain blood diseases, pyridium and neotropin as urinary antiseptics, and percaine, a new local anæsthetic. The employment of acetylcholine in various forms of arterial spasm is discussed, and new information is available regarding the basal hypnotics. The article on ipecacuanha has been rewritten, but it has to be confessed that in spite of the new compounds, auremetine and emetine periodide, the ideal drug to rid the intestine of amœbæ in the more chronic forms of dysentery is still to find. A very complete chapter on the nutrimenta gives the latest information on meat and milk preparations, graded milks, new infant foods of British manufacture, diabetic foods, and the accessory food factors. Important additions to organotherapy are the employment of heart-muscle extracts for angina pectoris, ovarian hormone preparations, and extracts of the cortex of the suprarenal glands. Apart from drugs, a great deal of information is offered to physician and pharmacist on many aspects of their respective crafts. Vaccines and antitoxins, now official in the B.P., are adequately discussed, and comparison is made with the corresponding doses and strengths in new foreign pharmacopœias. There is an article on blood transfusion; and an intravenous dose table and a therapeutic index of diseases and symptoms are included.

For those engaged in commerce, the plan of showing whether a preparation is a registered trade mark is a valuable feature, while exact information is afforded on the poisons schedule, the Dangerous Drugs Acts, the therapeutic substances regulations, and many other legal and excise matters of importance to medical workers and makers of chemicals used in medicine. Few medical men can afford to be without this valuable work, and Dr. Martindale is to be congratulated on the energy and efficiency with which he carries on the task initiated 50 years ago by his father and Dr. Wynn Westcott.

Practical Anatomy

By Six Teachers. Edited by E. P. STIBBE, F.R.C.S., Lecturer in Anatomy, London Hospital Medical School. London: Edward Arnold and Co. 1932. Pp. 719. 30*s*.

WE welcome this addition to the number of dissection manuals. The "Six Teachers" of the title page are Profs. Wright, Yeates, Stopford, Whitnall, and Lucas Keene, with Mr. P. Stibbe, who acts also in the capacity of editor. This list of well-known anatomists and teachers is in itself a guarantee of the soundness of their product, which is essentially a practical work written by those accustomed to help students in the dissecting-room. We note that the authors see no reason for discarding the old terminology, which they employ, although they have open minds on the use of other nomenclatures. The illustrations are appropriate and useful; we would like to see many more of them, for the student is helped in several ways by such aids. The book seems to be remarkably free from errors and misprints. The inferior constrictor is mentioned (p. 528) where the middle muscle was intended; in Fig. 86 and its copy the word "bronchi" is mis-spelt, and the section of the spleen shown in Fig. 154 is given as its "naked appearance"—a list of slips so negligible that the editor deserves congratulation. Altogether a good-looking book, well produced and easy to read, which should achieve real popularity.

The Pneumococci and their Enzymes

Research Work on the Pneumococci and their Enzymes and its Significance in Lobar Pneumonia. By A. COWAN GUTHRIE, M.B. London: Baillière, Tindall and Cox. 1932. Pp. 60. 7*s*. 6*d*.

THE experiments recorded in this book were started by the author in 1919 and continued in 1926 and 1930, and, as he states in the preface, have been carried out whilst he was conducting a very arduous practice. The monograph has the limitations of one whose author has evidently had to labour under difficulties and without numerous animal experiments with which to check his results. After a brief introduction, in which Dr. Guthrie defines the ordinary terms used in immunology such as antigens, complement, and antibodies, he goes on to record a number of experiments made on the pneumococcus and immune sera. As a result of these experiments Dr. Guthrie holds that it is unquestionably the endotoxin of the pneumococcus which protects it against lysis by the leucocytes and phagocytes. The immune serum destroys this endotoxin. The endotoxins of the pneumococci contain primarily hæmatoxin, and the pneumococci protect themselves against leucocytes and other phagocytes by means of hæmatoxin, which has a lytic effect on erythrocytes and leucocytes. Dr. Guthrie also describes four enzymes of the pneumococcus.

Basing his treatment on these bacteriological premises Dr. Guthrie considers it imperative tha during the whole course of pneumonia the patient should be supplied with oxygen. He also holds that complement is the dominating influence in extracting the enzymes from the pneumococcus and that if the patient's complement is deficient in quantity or quality this deficiency should be rectified at once by the injection of fresh blood with the usual precautions. He advocates also the use of oleate of sodium with a view to the solution of the pneumococcus, and of the use of optochin and antibody solution in conjunction. He gives a short account of the intracellular enzymes isolated by Avery in America from what is called S. III. bacillus for decomposing the capsule of Type III. pneumococcus. This enzyme, Dr. Guthrie suggests, may become useful in the treatment of pneumonia. The book contains some photomicrographs of the leucocytes at various stages of the experiments and a very brief bibliography.

Heilsera und Impfstoffe in der Praxis

By Prof. R. Bieling (Frankfort) and Prof. F. Meyer (Berlin). Leipzig: Georg Thieme. 1932. Pp. 184. With 48 illustrations. RM.11.

This little book is one of a series, the purpose of which is to give the principles underlying the different branches of therapeutics in a clear and practical form. It deals with the therapeutics of sera and vaccines, and is written, as such an introduction should be, on the basis of a thorough practical acquaintance with the work of a serum laboratory. It explains simply the preparation and testing of sera, and, above all, their methods of standardisation. All the ordinary sera are briefly described, and their use in clinical medicine indicated with commendable caution. The authors, as one might expect, depart in one or two particulars from current British and American practice, but to those who find German no hindrance the book can be strongly recommended as a reliable introduction to a subject which too often falls into the hands of mystifiers. We know of no book in English of the same scope which is so well written.

Control of Conception

By R. L. Dickinson, M.D., and Louise Stevens Bryant, M.D. London: Baillière, Tindall and Cox. 1932. Pp. 290. 24*s.*

This book is produced under the auspices of the American Committee on Maternal Health in response to requests for a brief compilation of what is at present known concerning the means of, and medical indications for, the control of conception. The reader is informed in a preface that its two main claims to originality reside in the way it interweaves clinical observation with the facts of anatomy, physiology, and chemistry, and in the manner that it "faces the two medical responsibilities" allied to contraception—namely, therapeutic abortion and sterilisation. The first of these claims is fully justified. The available knowledge of the physiology of coitus, which is scantier than that of any other function of the body, is intelligently epitomised. About three-quarters of the book is devoted to a discussion of the problems of contraception, and it is this part which will be of most interest to readers in this country.

Like Dr. Dickinson's other works, this one is fully documented, is illustrated by well-executed drawings, and is informed by a long practical experience of gynæcology. The discussion of the comparative merits of the different methods of controlling conception is among the best that has yet appeared. Especially valuable is the section devoted to the sheath. In America, as in Europe, this method is more generally used than any other except coitus interruptus. The 15 chief manufacturers in America are reported to produce 1,440,000 of these articles a day, and, according to Dr. Harmsen, a leading German firm of manufacturers sells no less than 24,000,000 a year. Yet this method has been somewhat groundlessly disparaged in most of the literature that has appeared in this country. Since the failure of the sheath is often attributable to the use of articles that have perished, the author recommends that the date of manufacture be stamped on each sheath. The disadvantages of all existing methods are now well recognised, and the researches in progress in this country and America with a view to discovering simpler and better ones are well summarised here. The book also contains chapters on the technique of abortion and of sterilisation.

Life in Nature

By James Hinton. Edited, with an introduction, by Havelock Ellis. London: George Allen and Unwin, Ltd. 1932. Pp. 291. 10*s.* 6*d.*

Seventy or eighty years ago some essays appeared in the *Cornhill Magazine* which when published as a volume met with a good reception, although the author, James Hinton, in his preface expressed modest doubts concerning the fate of his work. Hinton was aural surgeon to Guy's Hospital, had a large private practice, and represented well the clinical wisdom of his day, but he was far more distinguished as a philosopher than as a medical man, and "Life in Nature" thoroughly deserves republishing to-day. Mr. Havelock Ellis in an appreciative preface reduces the argument of the book to its simplest terms by reminding us how much materialistic interpretations of the phenomena of life upset the ordinary man in the middle of the nineteenth century. "To apply a 'materialistic' explanation to life seemed to deprive it of its glory, to kill what had been its special 'spiritual' exaltation, to reduce it to the low and common-place level which (except for poets at moments of unusual extravagance) characterised everything in nature outside life." Hinton's essays were a beautifully expressed intent to meet a prevalent disturbance of thought. In a loosely connected series of chapters he discusses the universality of life and the place of man in nature, and in a closing appendix supplies an attempt towards an interpretation of the laws of life. As lucid expositions of some of the more interesting questions which the known facts about living bodies suggest, certain of the arguments which he brought forward are necessarily not so valid as when they were originally stated, but this in no way detracts from the logicality of the arguments. Undoubtedly, Hinton was a real lover of wisdom. Writing about him in The Lancet shortly after his death, Samuel Wilks, his colleague at Guy's Hospital and in many ways a kindred philosophic spirit, said of the *Cornhill* essays: "They all show a train of thought which forbad him (Hinton) to grovel with details, but obliged him to link together and endeavour to harmonise the facts which he found in all dominions of nature. It is this which interests us, being the tendency of our modern thought. He knew not one 'ology from another, seeing they were but fictions of man's creating, but that all departments of nature were bound together by the same universal laws." These words in themselves justify the republication of "Life in Nature."

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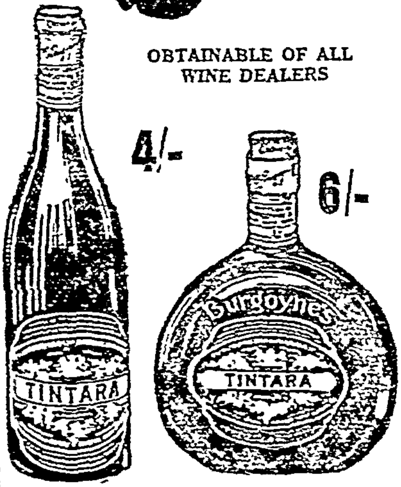

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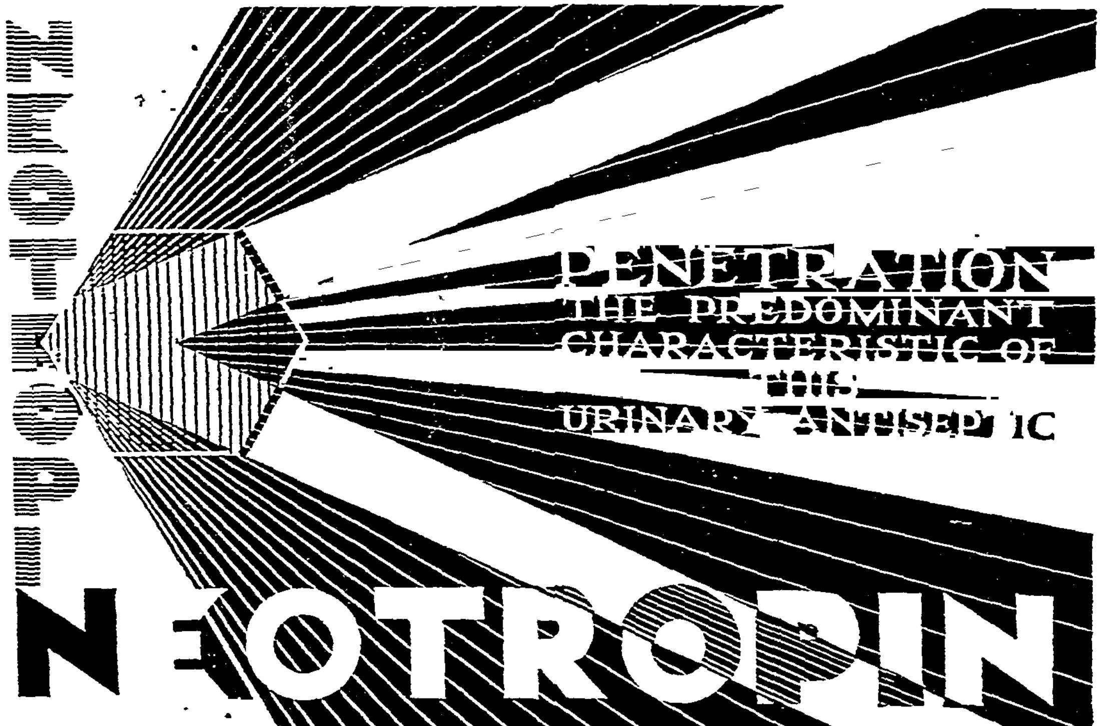

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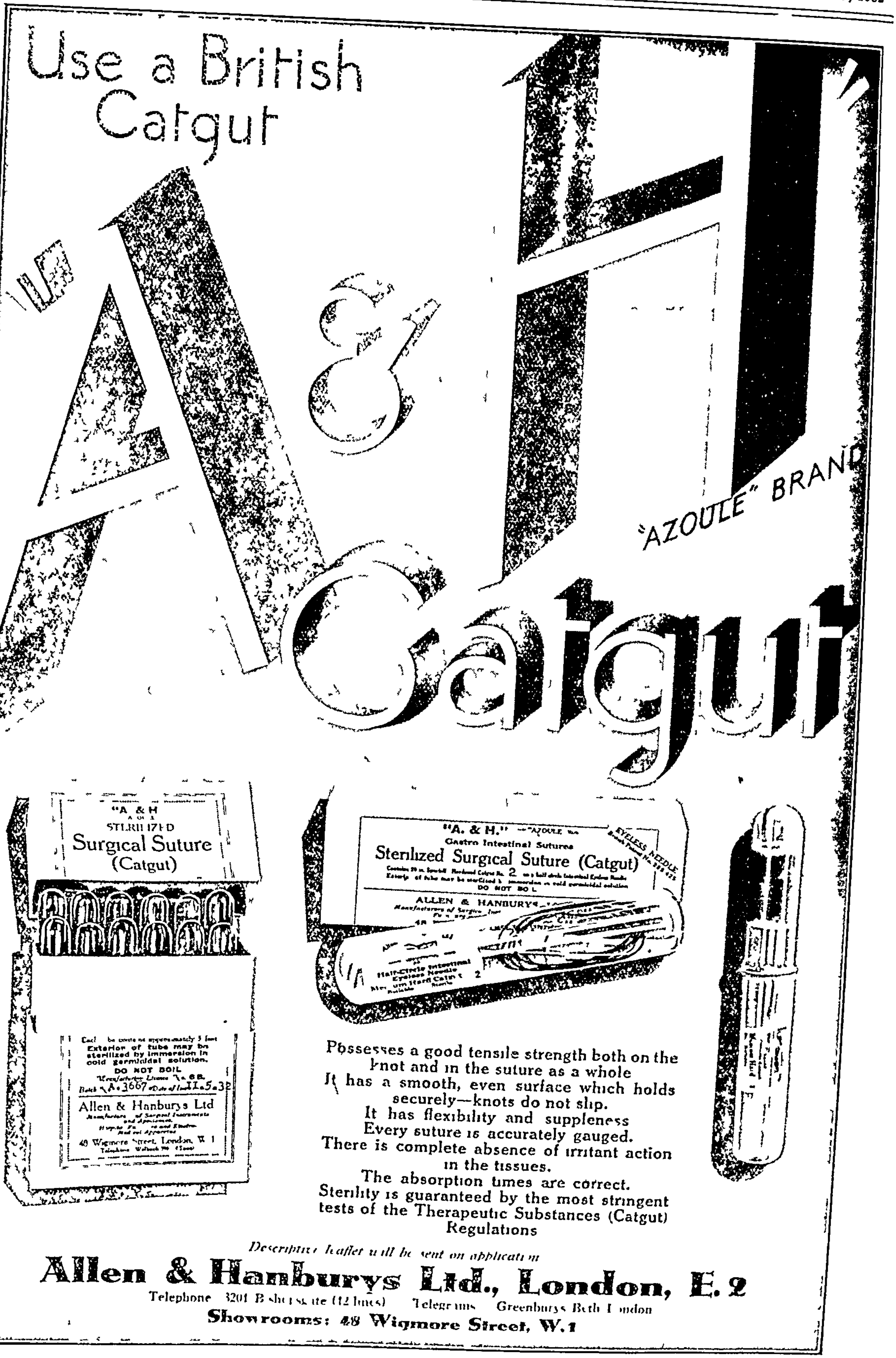

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See also pp. 11 & 20

THE LANCET

LONDON: SATURDAY, NOVEMBER 19, 1932

THE NEGLECT OF WHOOPING-COUGH

THOMAS WILLIS in his classical treatise, "Pharmaceutice Rationalis," published in 1674, remarks that the management of whooping-cough was left mainly in the hands of old women and empirics. We have certainly advanced from that position, but perhaps not so very greatly. The serious aspect of this disease of childhood is still underrated by the public—and by the medical profession. Even a casual search of the literature shows how little attention has been paid to it in the field of public health. Yet during the decade 1921–30, whooping-cough was responsible in England and Wales for 44,000 deaths, that is slightly more than measles and more than scarlet fever and diphtheria put together. At ages 0–5 whooping-cough took fifth place during this decade in the list of causes of mortality. It is obvious from these figures that, in spite of the enormous improvement that has taken place in its contribution to the death-rate during the last three-quarters of a century, whooping-cough remains a killing disease. Moreover its significance to the life of the nation does not lie only in its mortality. In a study just published[1] by Dr. PERCY STOCKS (assisted by Miss MARY KARN), it is estimated that during 1926–30 there was in London an average annual incidence of about 40,000 cases, and that more school time was lost through whooping-cough than through measles. Far more important than this, as Dr. STOCKS points out, is the toll of impaired physique, the cardiac damage which cannot even be guessed at, and in severe cases the possible psychological trauma due to "the incessant terrifying paroxysms with their sense of impending suffocation"—a factor to which so far no attention has been paid.

The material which Dr. STOCKS has studied has been mainly drawn from four London boroughs—Greenwich, Wandsworth, Holborn, and Battersea—in which compulsory notification of whooping-cough was in force. After a discussion of its fatality, which falls mainly upon children under 2 years, and decreases rapidly with age, and of its periodicity, biennial in Greenwich and Battersea, he turns to the population at risk in relation to the periodicity of the disease. The epidemic cycle in whooping-cough has usually been assumed to be accounted for either by (1) the fact that there is some cycle of activity of the bacillus influenced by seasonal conditions, or (2) that epidemics begin when sufficient children have accumulated who have not previously had the disease and terminate when this surplus of susceptibles has been depleted. The first of these assumptions was examined by MATTHEW YOUNG,[2] whose work hardly supported the theory since the period was not identical in different towns; to which STOCKS adds the difficulty of believing that the cycle could be in a different phase by several months in two areas of London streets whose populations were continually mixing with each other. The second hypothesis is shown in this paper also to be untenable. Calculation of the number of children not attacked shows that there may be no greater proportion of susceptibles in the population when an epidemic is starting than when one is ending, and at the same time of year. This result is in agreement with American figures published by SYDENSTRICKER,[3] which showed that an epidemic ceased when the total non-immune population not only was not exhausted, but had been reduced by as little as about one-fifth, "in spite," he says, "of the fact that opportunity for contact was afforded under the usual conditions of urban life, and that no effort to control the infection was exercised by the community, except to exclude cases from the schools after they had become clinically manifest." On the other hand, Dr. STOCKS produces evidence in favour of the explanation both of the termination of epidemics and of their periodicity by the occurrence of a latent immunisation of contacts as in measles, such immunity only lasting about one year instead of two or three. The occurrence of such a transient latent immunisation is indicated by (*a*) the measurement of the rise and fall of apparent infectiousness of cases to other children in the same house over a period of six years in Battersea; (*b*) the measurement of the frequency of second cases in houses after different intervals of time during a decade in Greenwich; and (*c*) an analysis of the attack-rates amongst home contacts in Holborn and Battersea during several years following exposure to infection as compared with those among control groups of children. This analysis, which requires some mathematical reasoning, suggests the broad conclusion that for every 100 children who have recognisable whooping-cough during an epidemic, at least 100 escape by acquiring a transient latent immunity, while another 300 escape either by the same process or by virtue of an inherent passive immunity, and the remainder by having had the disease or by avoidance of infection.

These findings are similar to those of the same author for measles, with certain differences. Whooping-cough is seen to have a longer epidemic period: the period of conferment of latent immunity is shorter; the proportion of children attacked at some time during life is smaller—about 60 per cent. instead of 90 per cent. in measles—rendering probable the existence of a certain proportion with inherent immunity which is not apparent in measles; and, finally, the ratio of latent to manifest infections is lower in whooping-cough. It is to be hoped that Dr. Stocks's careful study will lead to the payment of increased attention to what is, at present, one of the most serious of the infectious diseases of early childhood.

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[1] Jour. of Hyg., October, 1932, pp. 581–619.

[2] Proc. Roy. Soc. Med., Section of Epidemiol., 1920, xiii., 207.

[3] Millbank Memorial Fund Quarterly Bull., 1932, x., 302.

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DIET IN DIABETES

Nearly four years ago[1] a correspondent in our columns drew attention to the opinions and results of Prof. Wilhelm Falta, of Vienna, who had long advocated the use of higher carbohydrate diets in the treatment of diabetes. Although a few workers in this country had been allowing their patients more carbohydrate, with insulin, it was not until 1930 that interest in this method of treatment became general, and the belief in extreme restriction of carbohydrates began to give way. Since then most of the authorities, both in England and America, have spoken encouragingly of the newer form of diet, and though the change of opinion was slow at first it has lately become rapid. Nor is this change a slight one. For many years after the discovery of insulin diabetic patients were kept strictly to an abnormal diet, and an allowance of carbohydrate greater than 60 g. a day was rare except in the mildest cases. On such diets constant attention to the intake of both carbohydrate and fat was necessary, and when still smaller quantities of the former were allowed the risk of acidosis was always present. A typical diet, laid down less than four years ago, would have read: carbohydrate, 50 g.; protein, 70 g.; fat, 130 g. To-day the quantities of fat and carbohydrate have been reversed by many physicians, so that the figures might read: carbohydrate, 200 g.; fat, 60 g. The main cause of so violent a reaction against the older practice is that the results it gave were not found to justify the difficulties and disadvantages of its application. It was thus not uncommon to find, as it was put in one discussion,[2] that patients who either could not or would not adhere to a low carbohydrate diet did as well or better than those who rigidly obeyed their doctors' orders.

When the carbohydrate is considerably increased it is found that a very small addition to the insulin allowance is often sufficient to maintain the urine free of sugar; in some cases two or three times as much carbohydrate can be taken on the same or even a lower insulin dosage. The use of such higher carbohydrate diets with insulin is a material gain from the patient's point of view, because he is able to take a simpler and more physiological diet. Many clinical reports show also that he feels better. As regards the effect on the disease itself it is perhaps early yet to judge, but a good deal of evidence points to some improvement under the new régime.[3] It is certain, however, that the total amount of carbohydrate allowed, if covered by insulin, is not the only factor concerned in the treatment of diabetes. The total calorie intake is certainly important, especially in elderly patients who have a tendency to obesity. The proportion of fat which should be given is still a matter for discussion, though Falta and others hold that large variations have little or no influence upon the hyperglycæmia or glycosuria. Clearly unless evidence is strong that a low fat intake is beneficial it is to the great advantage of a high carbohydrate diet that fats may be taken at the patient's own discretion, without risk of ketosis, so that only the carbohydrates require weighing.

The diet which seems to be proving most suitable for the diabetic is the one which, with the help of insulin, most nearly approaches the normal. It is reasonable to conclude that the work of the last few years has shown that with insulin extreme variations in diet are possible, whilst maintaining patients in good health and free of glycosuria. During these years however the incidence of diabetes has shown little change, and there is no proof that we have yet any means of obtaining regeneration of the islet cells of the pancreas. It is probably on these lines, rather than by dietary variations in the control of the disease, that further advance is most likely to come, and there may be pointers in the right direction among the suggestions put forward at the recent Vienna congress (reported on page 1127) over which Prof. Falta presided. Meanwhile it is a notable gain that a greater freedom in food is now known to be possible in diabetes, and if there is any danger in the change of opinion it is only that this freedom may perhaps be carried too far.

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MEDICINE AND THE STATE

During the decade preceding the war State medicine in this country developed rapidly from its environmental preoccupations toward functions more directly affecting the individual member of the community. The Notification of Births Act, 1907, brought the health departments into early and direct contact with the mother and her infant; the Education (Administrative Provisions) Act of the same year established school medical inspection and treatment; the Insurance Act, 1911, made a large proportion of the medical profession virtually part-time State officials, and brought into being extensive provision for the tuberculous; while the Mental Deficiency Act, 1913, launched schemes for the care and control of the mentally deficient. The outbreak of war brought an acceleration of this movement, the prevention and treatment of venereal diseases becoming a national and local charge as the result of the Public Health (Venereal Diseases) Regulations, 1916, and great extensions of the local authorities' powers and duties in relation to the welfare of mothers and children resulting from the passage of the Maternity and Child Welfare Act, 1918. Indeed, so rapid were the developments that there began to arise in the minds of private practitioners a good deal of uneasiness about these apparent encroachments on the field of private practice, and this disquiet was only allayed by an admirable report of November, 1928, by Dr. ALFRED COX, medical secretary of the British Medical Association. The tendency of public health legislation was clearly in a direction which required the careful attention of the medical profession in relation both to the welfare of the people and to their own interests, and the advocacy by the Association of extensions of medical benefit before the Royal Commission on National Health Insurance in 1926 was a sign that practitioners had come to realise the inability of persons of the insured class to obtain adequate medical attention by private means. A large measure of socialisation of medicine then seemed imminent. As far back as 1920 the Dawson Report had formulated a scheme for coördinating general practice with hospitals and the existing clinic system of local authorities through a network of primary and secondary health centres linked up with the great teaching hospitals. Ten years later the British Medical Association adopted its "Hospital Policy" and "Proposals for a General Medical Service for the Nation," which were largely an acceptance and an elaboration of the Dawson scheme, and of a widely extended system of medical insurance, regard being taken of the new position which had been created by the passage of the Local Government Act, 1929.

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[1] Hunt, T. C.: Restricted Diets or Insulin? The Lancet, 1929, i., 50.

[2] Ibid., 1931, i., 351.

[3] Graham, G., Clark, A., and Robertson, H. E.: Ibid., Nov. 5th, 1932, p. 990. Jamieson, H. C.: Canad. Med. Assoc. Jour., October, 1932, p. 389.

The situation is now very different from what it was two years ago. Excessive claims on sickness benefits and the abnormal burdens falling on unemployment insurance funds have cast doubt upon the soundness of the whole idea of social insurance, both from the economic and the moral standpoint. The international trade slump and our own consequent financial distresses have put out of court in the meantime any extension of services involving subventions which might be a burden on industry, whether directly or through rates and taxes. Moreover, the relative failure to attain that integration of the medical services which the Ministry of Health Act of 1919 and the Local Government Act, 1929, were designed to bring about, centrally in the one case and locally in the other, has revealed the practical obstacles which stand in the way of medical idealism. It is useful therefore to ask whether the ideas have been sound and to observe in what direction other peoples have been going. Before their financial crisis the people of America, faced with a much looser public health organisation than ours, revealing wide variation in provision from State to State and county to county, were beginning to pursue extensive investigations into the machinery of the medical services, of which the White House Conference on Child Health and Protection was a notable example. The most valuable, however, has probably been that instituted in 1928 by the Millbank Memorial Fund and carried out by Sir ARTHUR NEWSHOLME, its scope being the "relation between the private and official practice of medicine, with special reference to the prevention of disease" throughout the civilised world. Sir ARTHUR has related the facts as he collected them in various countries in three volumes of International Studies,[1] and in a book published more recently[2] he gives independently, but, of course, with ample reference to those publications, the conclusions he has arrived at as to the principles which should govern the future progress of State medicine and some guidance past the pitfalls in its way. The earlier volumes were largely the jottings of a peripatetic investigator and serve for reference rather than consecutive reading, but "Medicine and the State" is the ripe fruit of long years of experience as a general practitioner, medical officer of health of a provincial town, and chief medical officer of the local government board, fertilised by the study of foreign methods which he has recently had the opportunity to make.

Apart from the admirable hospital systems of Scandinavian countries (especially those in Denmark) and their relatively complete schemes of social insurance, Sir ARTHUR does not suggest that we have to borrow from other European nations. He finds the medical profession in Germany, France, and Belgium uneasy in their relations to State insurance and the establishment of polyclinics, especially in Eastern Europe, a dangerous substitute for that coöperation of the general practitioners, consultants, hospitals, and the public health service, which is urgently needed and which can only be obtained for a large proportion of the population by means of organisation on some other basis than fee-paying for services rendered. He criticises all existing insurance schemes for their weakness on the preventive side. In his view there can be little further advance in personal hygiene except through the influence of the general practitioner whom he regards as still imperfectly equipped for such work. The first step, he thinks, is to introduce a complete medical examination of every entrant to State insurance and to develop a system of periodical examination of all contributors without waiting for sickness to bring doctor and patient together. As a corollary, more and better teaching of preventive medicine is essential. Effective arrangements are required for making hospital treatment available for those who need it without the intrusion of any other criterion, but it is noted that no country has succeeded in evolving an insurance scheme which is capable of approaching financial capacity to bear this burden upon its funds: Sir ARTHUR retains, on the whole, his faith in the British type of public health service, but he looks forward steadily to the time when the wider association of general practitioners with public medical provision will enable them to do some, at least, of the work now done by assistants in health departments in connexion with the welfare of mothers and children. Several passages in the book seem to imply that he is

doubtful whether a really great advance in the application of the preventive idea can be attained outside of a salaried service; but he is obviously quite aware that no such service can be established until it is welcome to the medical profession. His immediate and practical suggestion is an extension in quality rather than quantity. Against some of the abuses of insurance he suggests technical safeguards derived from the practice of other lands, but he sees no final solution of this problem but in a higher moral outlook. He is firmly a believer in the perfectibility of mankind and quotes with approval in reference to these matters the saying of Senator ELIHU ROOT that "pessimism is criminal weakness."

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[1] London: George Allen and Unwin, Ltd., 16s. each.

[2] Medicine and the State. By Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. London: George Allen and Unwin, Ltd. 1932. Pp. 300. 7s. 6d.

All these things appear to be beyond the realm of practical politics just now. The objects of the Local Government Act have been only partially fulfilled. The outdoor medical service of the poor-law has been little changed. Coöperation between voluntary and council hospitals is not much closer. Indeed, the heralded reform in local government has proved in some places less a break up than a consolidation of the poor-law, and, where steps have been taken to transfer hospitals out of its atmosphere, there is, here and there, an itching to bring them back in the sacred name of economy. But the pendulum swings fast in our time, and we can hardly foresee how soon we may be faced with dangers to medicine of the opposite kind. Sir ARTHUR NEWSHOLME's valuable studies will be indispensable to those who wish to prepare their minds for some of the medico-political problems of the future.

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THE B.B.C. ON MEDICAL PRIVILEGE

BY means of lectures and mock trials the B.B.C. is pursuing the laudable object of acquainting us with the law which every citizen is supposed to know. The latest item in the series of trials, broadcast under the title of "Consider your Verdict," consisted of the closing speeches and the judge's summing-up in imaginary proceedings against a medical practitioner. Listeners were invited to suppose that a doctor had been asked in the witness-box to answer questions in violation of professional confidence and that, instead of refusing to answer, he had given false answers, thereby exposing himself to a prosecution for perjury. In so far as the dramatising of this hypothesis gave publicity to the principle of medical secrecy, and in so far as it explained that the principle exists in the interests of the patients and is therefore for the public benefit, the mock trial was excellent. In so far as it suggested that doctors, *instead of keeping their mouths shut, are ready to* give false answers upon oath, it was less admirable. The hypothetical doctor was supposed to have been asked two questions before the magistrates—had he treated a patient for drug-taking, and had he supplied the patient with dangerous drugs? To both these questions he answered "No." When charged with perjury he admitted that the answers were untrue but, pleading that they were made in accordance with professional etiquette, he contended that they were not "wilfully" false within the meaning of the Perjury Act. Actually, of course, in real life no practitioner would have adopted so inept and so mistaken a line of conduct. He might or might not have declined to answer, according to his personal view of his professional duty. Thereupon the magistrates might or might not have taken serious notice of the refusal. They have not the powers of an assize court to commit a witness for contempt of court. The Summary Jurisdiction Acts enable magistrates to send a witness to gaol for seven days if he refuses to answer proper questions "without offering any just excuse for such refusal." The witness might or might not successfully maintain that medical privilege was a just excuse. But none of these contingencies would give a jury a chance to answer the glib question "should a doctor tell?" The B.B.C., therefore, to bring the doctor's dilemma within the range of the "Consider your Verdict" series, had to drag in the exotic and improbable element of perjury.

The statement that we are all supposed to know the law is not quite accurate. The true legal maxim is that ignorance of the law excuses nobody. A few years ago a witness at the Wandsworth County Court gave yet another version with which many will sympathise. "I know," he said, "that ignorance is no excuse for the law." Whichever of these versions we may prefer, we shall all welcome the efforts of the B.B.C. to instruct us. The medical profession, however, must mildly protest against the broadcasting of a suggestion that perjury is part of the professional duty of a doctor.

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THE tumour of the suprarenal medulla described by Mr. F. W. Law elsewhere in our present issue has two important characteristics—namely, its occurrence in early infancy, and the development of metastases in the cranium. Records of such tumours are now fairly numerous—J. Klein [1] has recently reported a similar case—and so frequently do these characteristics recur, that it may almost be said that multiple tumours of the skull bones and orbits in a child under 2 years indicate either chloroma or malignant tumour of the suprarenal medulla. There are, it must be admitted, cases on record—those of the so-called Pepper type—in which metastases tend to be confined to the abdomen, the liver being their chief site of deposit. Frew found that these were mostly tumours originating in the right suprarenal, and he explained their limitation on the grounds of peculiarities in the lymphatic drainage. A study of the larger number now on record, however, shows that the association of right-sided tumours with limitation to the abdomen does not hold very constantly. Indeed it seems doubtful whether the differentiation of two clinical types, the Pepper type on the one hand, and the Hutchison type with its numerous cranial and other bone metastases on the other hand, is of much value. Quite a number of cases in which liver involvement has predominated, and which might thus pertain to the Pepper group, have shown cranial metastases. It should be remembered that Pepper's collection of cases was made largely with a view to studying congenital tumours of the liver as well as the suprarenals, so that liver involvement was a somewhat prominent feature of his observations. As a general rule it may be taken that the characteristic feature of malignant suprarenal medullary tumours in infants is the tendency to produce far-flung metastases in bone and elsewhere. Subcutaneous nodules for instance, probably similar to those seen in Law's case, were found in a case reported by N. B. Capon[2] as well as in three others which he cited.

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[1] Amer. Jour. Med. Sci., October, 1932, p. 491.

Views on the histogenesis of these tumours have been revolutionised in the last 20 years. The older observers seem usually to have classified them as sarcomata, and Marchand and Küster were probably the first to demonstrate their histogenic relationship to the sympathetic nervous system, although Virchow had already suggested such a possibility. Nowadays this relationship is generally recognised and accordingly such terms as neuroblastoma and ganglioneuroma have been adopted. A study of their microscopic characters seldom fails to make clear the histogenesis. Most of these tumours, especially the more malignant ones, exhibit the peculiar rosette formations which are characteristic of retinal gliomas, and which, as Shaw Dunn[3] has demonstrated, can be seen in the neuroblastic cells of the suprarenal medulla of the fœtus. Other less malignant ones show unmistakable ganglion cells and nerve-fibres, and Shaw Dunn has traced in an enlightening manner the true interrelationship of the more highly differentiated ganglio-neuromata with the more primitive neuroblastomata. Doubtless some enthusiastic exponent of the newer doctrines on gliomata will sooner or later relegate the latter type to the class of medulloblastomata, if that term is to survive.

These tumours of the suprarenal medulla are interesting because they provide some of the most clearly defined representations of tumours arising from nerve-cells. As Shaw Dunn remarks, they "represent new growths of the most highly specialised cells of the body, cells which apparently never undergo division in normal cases and which are therefore least likely to exhibit neoplastic development."

PRESENTATION TO SIR ST CLAIR THOMSON

PRIOR to the usual scientific business of the Section of Laryngology at the Royal Society of Medicine, on Nov. 4th, a pleasing ceremony was enacted in the form of a presentation, by members of the section, of his portrait in oils to Sir StClair Thomson. It had recently come to the knowledge of certain members of the section that a good portrait was in existence and could be acquired. Mr. Walter Howarth, the retiring president of the section, in making the presentation said that he would not attempt to enumerate the reasons which led to the desire to make the presentation, further than to point out that pre-eminently Sir StClair stood for British laryngology, a specialty which had passed through many vicissitudes before it was recognised as such, and that it must be a source of real gratification to him to realise how great had been his personal share in the efforts for status. Mr. Howarth pointed out that Sir StClair, linguist and traveller, and member of many foreign societies, had secured international friends for the specialty; he had made his house a centre where all men met; and his acts of kindness and help to his colleagues were constant, as many members of the section had experienced. In making the presentation members felt they were doing themselves honour in the act. Sir StClair Thomson's reply was in characteristic vein. Many of his successes, he said, had come to him unsought, so that he felt like a man at the end of the Great War who displayed a long row of medals across his chest, and when asked how he got them replied, "The first one I received by mistake, and I got the others because I had the first." One of his ambitions, he said, had been to earn the esteem and regard of his fellows, and in that he must now believe he had not altogether failed.

SUN-GLARE IN IRAQ

Squadron-Leader P. C. Livingston has made some interesting observations on the effect of sun-glare on the eyes not only of airmen, but of other Europeans employed in various capacities in Iraq.[1] Trouble arises mainly, not from atmospheric glare reflected from the sky but from light reflected from the ground, either directly on to the macula or laterally on to the more peripheral parts of the retina. The possible ways in which the visual function may be affected were studied as regards visual acuity, accommodation (spasm or fatigue), alterations in the field of vision and of the senses for form, light, and colour, spasm or fatigue of convergence and alterations in muscle balance, and finally cerebral fatigue involving loss of power to concentrate as well as many of the defects already mentioned. The importance of these observations will be evident in relation to airmen for whom defect in any of these factors is liable to cause accidents. Those examined were divided into five groups according to their occupation, air pilots forming only one of the groups. Over 100 persons were subjected to the various tests, and as far as was found possible all were given a thorough examination once a month during the period from May, 1930, to November, 1931, each being examined from five to ten times. As to visual acuity, 14 of those tested were found to have fallen below their initial visual standard, and in these the general tendency was always towards recovery in the cool weather. In three cases however the loss persisted. Fatigue of accommodation and also of convergence tended to increase during the hot weather. Nearly all those tested suffered to a greater or less extent in these respects. The power of binocular coördination, tested by the Bishop Harman diaphragm test, was affected prejudicially in most of those tested, and this, too, more in the summer than the winter. The importance of this function is great in relation to effecting a safe landing in an aeroplane. A good deal of attention was paid to the light sense—light minimum and light difference—and a new apparatus is described (the Clement Clarke test) by which these senses can be more accurately tested than by other tests in common use. A reduction in both senses was found to be exceedingly common. The visual fields were also found to be contracted concentrically to some extent in certain cases—between one-half and one-third of those examined. In 13 cases ring or arcuate scotomata were demonstrated. On the other hand no fundus changes due to indirect sun-glare were ever demonstrated with the ophthalmoscope. Nor was there any reason to suspect that the colour of the irides had any relation to the effects of glare. There seems to be no way in which we can differentiate between those who are and those who are not susceptible to the deleterious effects of sun-glare. The presence of chronic conjunctivitis naturally tends to increase susceptibility. The outstanding clinical signs of an acute attack are extreme

doubtful whether a really great advance in the application of the preventive idea can be attained outside of a salaried service; but he is obviously quite aware that no such service can be established until it is welcome to the medical profession. His immediate and practical suggestion is an extension in quality rather than quantity. Against some of the abuses of insurance he suggests technical safeguards derived from the practice of other lands, but he sees no final solution of this problem but in a higher moral outlook. He is firmly a believer in the perfectibility of mankind and quotes with approval in reference to these matters the saying of Senator ELIHU ROOT that "pessimism is criminal weakness."

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[2] Jour. Path. and Bact., 1928, xxxi., 659.

[3] Ibid., 1914–15, xix., 456.

[1] Brit. Jour. Ophthalmol., October, 1932, p. 577.

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[1] Amer. Jour. Med. Sci., October, 1932, p. 191.

Views on the histogenesis of these tumours have been revolutionised in the last 20 years. The older observers seem usually to have classified them as sarcomata, and Marchand and Küster were probably the first to demonstrate their histogenic relationship to the sympathetic nervous system, although Virchow had already suggested such a possibility. Nowadays this relationship is generally recognised and accordingly such terms as neuroblastoma and ganglioneuroma have been adopted. A study of their microscopic characters seldom fails to make clear the histogenesis. Most of these tumours, especially the more malignant ones, exhibit the peculiar rosette formations which are characteristic of retinal gliomas, and which, as Shaw Dunn [3] has demonstrated, can be seen in the neuroblastic cells of the suprarenal medulla of the fœtus. Other less malignant ones show unmistakable ganglion cells and nerve-fibres, and Shaw Dunn has traced in an enlightening manner the true interrelationship of the more highly differentiated ganglio-neuromata with the more primitive neuroblastomata. Doubtless some enthusiastic exponent of the newer doctrines on gliomata will sooner or later relegate the latter type to the class of medulloblastomata, if that term is to survive.

These tumours of the suprarenal medulla are interesting because they provide some of the most clearly defined representations of tumours arising from nerve-cells. As Shaw Dunn remarks, they "represent new growths of the most highly specialised cells of the body, cells which apparently never undergo division in normal cases and which are therefore least likely to exhibit neoplastic development."

PRESENTATION TO SIR ST CLAIR THOMSON

PRIOR to the usual scientific business of the Section of Laryngology at the Royal Society of Medicine, on Nov. 4th, a pleasing ceremony was enacted in the form of a presentation, by members of the section, of his portrait in oils to Sir StClair Thomson. It had recently come to the knowledge of certain members of the section that a good portrait was in existence and could be acquired. Mr. Walter Howarth, the retiring president of the section, in making the presentation said that he would not attempt to enumerate the reasons which led to the desire to make the presentation, further than to point out that pre-eminently Sir StClair stood for British laryngology, a specialty which had passed through many vicissitudes before it was recognised as such, and that it must be a source of real gratification to him to realise how great had been his personal share in the efforts for status. Mr. Howarth pointed out that Sir StClair, linguist and traveller, and member of many foreign societies, had secured international friends for the specialty; he had made his house a centre where all men met; and his acts of kindness and help to his colleagues were constant, as many members of the section had experienced. In making the presentation members felt they were doing themselves honour in the act. Sir StClair Thomson's reply was in characteristic vein. Many of his successes, he said, had come to him unsought, so that he felt like a man at the end of the Great War who displayed a long row of medals across his chest, and when asked how he got them replied, "The first one I received by mistake, and I got the others because I had the first." One of his ambitions, he said, had been to earn the esteem and regard of his fellows, and in that he must now believe he had not altogether failed.

SUN-GLARE IN IRAQ

Squadron-Leader P. C. Livingston has made some interesting observations on the effect of sun-glare on the eyes not only of airmen, but of other Europeans employed in various capacities in Iraq.[1] Trouble arises mainly, not from atmospheric glare reflected from the sky but from light reflected from the ground, either directly on to the macula or laterally on to the more peripheral parts of the retina. The possible ways in which the visual function may be affected were studied as regards visual acuity, accommodation (spasm or fatigue), alterations in the field of vision and of the senses for form, light, and colour, spasm or fatigue of convergence and alterations in muscle balance, and finally cerebral fatigue involving loss of power to concentrate as well as many of the defects already mentioned. The importance of these observations will be evident in relation to airmen for whom defect in any of these factors is liable to cause accidents. Those examined were divided into five groups according to their occupation, air pilots forming only one of the groups. Over 100 persons were subjected to the various tests, and as far as was found possible all were given a thorough examination once a month during the period from May, 1930, to November, 1931, each being examined from five to ten times. As to visual acuity, 14 of those tested were found to have fallen below their initial visual standard, and in these the general tendency was always towards recovery in the cool weather. In three cases however the loss persisted. Fatigue of accommodation and also of convergence tended to increase during the hot weather. Nearly all those tested suffered to a greater or less extent in these respects. The power of binocular coördination, tested by the Bishop Harman diaphragm test, was affected prejudicially in most of those tested, and this, too, more in the summer than the winter. The importance of this function is great in relation to effecting a safe landing in an aeroplane. A good deal of attention was paid to the light sense—light minimum and light difference—and a new apparatus is described (the Clement Clarke test) by which these senses can be more accurately tested than by other tests in common use. A reduction in both senses was found to be exceedingly common. The visual fields were also found to be contracted concentrically to some extent in certain cases—between one-half and one-third of those examined. In 13 cases ring or arcuate scotomata were demonstrated. On the other hand no fundus changes due to indirect sun-glare were ever demonstrated with the ophthalmoscope. Nor was there any reason to suspect that the colour of the irides had any relation to the effects of glare. There seems to be no way in which we can differentiate between those who are and those who are not susceptible to the deleterious effects of sun-glare. The presence of chronic conjunctivitis naturally tends to increase susceptibility. The outstanding clinical signs of an acute attack are extreme

doubtful whether a really great advance in the application of the preventive idea can be attained outside of a salaried service; but he is obviously quite aware that no such service can be established until it is welcome to the medical profession. His immediate and practical suggestion is an extension in quality rather than quantity. Against some of the abuses of insurance he suggests technical safeguards derived from the practice of other lands, but he sees no final solution of this problem but in a higher moral outlook. He is firmly a believer in the perfectibility of mankind and quotes with approval in reference to these matters the saying of Senator Elihu Root that "pessimism is criminal weakness."

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[2] J. Path. and Bact., 1928, xxxi., [illegible]

[3] Ibid., 1914-15, xix., [illegible]

[1] [illegible] 1932, [illegible]

All these things appear to be beyond the realm of practical politics just now. The objects of the Local Government Act have been only partially fulfilled. The outdoor medical service of the poor-law has been little changed. Coöperation between voluntary and council hospitals is not much closer. Indeed, the heralded reform in local government has proved in some places less a break up than a consolidation of the poor-law, and, where steps have been taken to transfer hospitals out of its atmosphere, there is, here and there, an itching to bring them back in the sacred name of economy. But the pendulum swings fast in our time, and we can hardly foresee how soon we may be faced with dangers to medicine of the opposite kind. Sir Arthur Newsholme's valuable studies will be indispensable to those who wish to prepare their minds for some of the medico-political problems of the future.

ANNOTATIONS

THE B.B.C. ON MEDICAL PRIVILEGE

By means of lectures and mock trials the B.B.C. is pursuing the laudable object of acquainting us with the law which every citizen is supposed to know. The latest item in the series of trials, broadcast under the title of "Consider your Verdict," consisted of the closing speeches and the judge's summing-up in imaginary proceedings against a medical practitioner. Listeners were invited to suppose that a doctor had been asked in the witness-box to answer questions in violation of professional confidence and that, instead of refusing to answer, he had given false answers, thereby exposing himself to a prosecution for perjury. In so far as the dramatising of this hypothesis gave publicity to the principle of medical secrecy, and in so far as it explained that the principle exists in the interests of the patients and is therefore for the public benefit, the mock trial was excellent. In so far as it suggested that doctors, instead of keeping their mouths shut, are ready to give false answers upon oath, it was less admirable.

The hypothetical doctor was supposed to have been asked two questions before the magistrates—had he treated a patient for drug-taking, and had he supplied the patient with dangerous drugs? To both these questions he answered "No." When charged with perjury he admitted that the answers were untrue but, pleading that they were made in accordance with professional etiquette, he contended that they were not "wilfully" false within the meaning of the Perjury Act. Actually, of course, in real life no practitioner would have adopted so inept and so mistaken a line of conduct. He might or might not have declined to answer, according to his personal view of his professional duty. Thereupon the magistrates might or might not have taken serious notice of the refusal. They have not the powers of an assize court to commit a witness for contempt of court. The Summary Jurisdiction Acts enable magistrates to send a witness to gaol for seven days if he refuses to answer proper questions "without offering any just excuse for such refusal." The witness might or might not successfully maintain that medical privilege was a just excuse. But none of these contingencies would give a jury a chance to answer the glib question "should a doctor tell?" The B.B.C., therefore, to bring the doctor's dilemma within the range of the "Consider your Verdict" series, had to drag in the exotic and improbable element of perjury.

The statement that we are all supposed to know the law is not quite accurate. The true legal maxim is that ignorance of the law excuses nobody. A few years ago a witness at the Wandsworth County Court gave yet another version with which many will sympathise. "I know," he said, "that ignorance is no excuse for the law." Whichever of these versions we may prefer, we shall all welcome the efforts of the B.B.C. to instruct us. The medical profession, however, must mildly protest against the broadcasting of a suggestion that perjury is part of the professional duty of a doctor.

TUMOURS OF THE SUPRARENAL MEDULLA

The tumour of the suprarenal medulla described by Mr. F. W. Law elsewhere in our present issue has two important characteristics—namely, its occurrence in early infancy, and the development of metastases in the cranium. Records of such tumours are now fairly numerous—J. Klein [1] has recently reported a similar case—and so frequently do these characteristics recur, that it may almost be said that multiple tumours of the skull bones and orbits in a child under 2 years indicate either chloroma or malignant tumour of the suprarenal medulla. There are, it must be admitted, cases on record—those of the so-called Pepper type—in which metastases tend to be confined to the abdomen, the liver being their chief site of deposit. Frew found that these were mostly tumours originating in the right suprarenal, and he explained their limitation on the grounds of peculiarities in the lymphatic drainage. A study of the larger number now on record, however, shows that the association of right-sided tumours with limitation to the abdomen does not hold very constantly. Indeed it seems doubtful whether the differentiation of two clinical types, the Pepper type on the one hand, and the Hutchison type with its numerous cranial and other bone metastases on the other hand, is of much value. Quite a number of cases in which liver involvement has predominated, and which might thus pertain to the Pepper group, have shown cranial metastases. It should be remembered that Pepper's collection of cases was made largely with a view to studying congenital tumours of the liver as well as the suprarenals, so that liver involvement was a somewhat prominent feature of his observations. As a general rule it that all the butters, English or Antipodean, from cows fed with grass or cod-liver oil had approximately the same value. This result is in conformity with some of the most recent research, which has indicated that vitamin A, when absorbed in great quantity, either in the form of vitamin A or of carotene, though it may be stored in the liver in large amounts, is not transferred to the milk of a lactating mammal in anything like a proportional quantity; there seems to be a maximal value for the vitamin A in milk which is not exceeded however much is ingested. Doubtless all the butters investigated were derived from cows receiving vitamin A in amount sufficient to produce the maximal possible output into the milk.

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[1] Amer. Jour. Med. Sci., October, 1932, p. 191.

THE NATURE AND TREATMENT OF ULCUS TROPICUM

NEXT to fevers and fluxes, ulcerations of the skin, in some form or other, are one of the worst scourges of the untutored native. There are ulcers which are easily recognisable as being due to yaws, syphilis, veld sore, or dermal leishmaniasis, but these are not exactly what is meant by tropical ulcer. The lesion known by this name is a sloughing phagadænic condition affecting mainly the legs, and common in most tropical countries, especially those with a hot damp climate. Occasionally this disease assumes epidemic proportions and may sweep forward like a plague. The ulcer commences as a bleb, or bulla, and rapidly breaks down, involving, in serious cases, muscles, tendons, vessels, and nerves, and it may be the periosteum of the bones.

Because of its prevalence and the illness it causes, special attention has been directed towards ulcus tropicum in Central and East Africa, where, indeed, it forms one of the major problems. The patients usually exhibit signs of malnutrition and, as recorded by W. E. McCulloch[1] in 1928, examination of natives in Northern Nigeria showed that those suffering from this condition had a high blood-sugar but a low calcium content, whilst analysis of the native dietary disclosed a marked preponderance of carbohydrate with a deficiency in both protein and salt. It is believed that that lowered resistance of the tissues leads more readily to invasion by pathogenic organisms. These views are more or less supported by the work of M. Hughes[2] and T. R. F. Kerby[3] in Malaya. In our issue of Oct. 22nd Dr. L. J. A. Loewenthal subscribes to the generally accepted view that tropical ulcer is best regarded as a deficiency disease. His observations were made in Uganda, and he considers that the spirochætes and fusiform bacilli so constantly recovered from these lesions are of no significance because they are found in every wound and abrasion of the skin in the tropics. It is noteworthy that in the Bugwere and Bugishu districts of Uganda tropical ulcer is seen almost exclusively among the poorest classes of natives; seldom, if ever, does it appear in a chief's family or amongst the Baganda, who are well-to-do and eat meat twice weekly in addition to their customary diet of milk, unripe bananas, and sweet potatoes.

Treatment with antiseptics and intravenous injections of novarsenobillon having proved disappointing, Loewenthal tried daily intravenous injections of calcium chloride (grs. 15 in 10 c.cm. distilled water). This remedy rapidly brought about the disappearance of the offensive smell and was followed by granulation and healing. The average duration of calcium treatment was 4·8 weeks, whereas the average duration of other forms of treatment was eight months. In our present issue, however, Dr. Clifford James describes an entirely different way of dealing with tropical ulcer which he has successfully used in Choiseul, British Solomon Islands. He has adopted excision and skin-graft of the ulcers, because among the Solomon Islanders it is found that after ordinary cicatrisation the scar rapidly breaks down again. The methods were curettage of the ulcer and application of seed grafts, or cleaning of the ulcer by medical methods, with application of Thiersch or seed grafts to the granulations; or, again, actual excision of the ulcer and immediate or subsequent application of Thiersch or seed grafts. The ideal treatment, according to James, is one which heals a tropical ulcer by replacing it by normal or nearly normal skin. The results proved, in his capable hands, most gratifying; out of a series of 45 cases, all except 4 were completely successful. The question of a dietetic factor amongst these primitive Melanesians is not discussed, but doubtless it is present there as well.

IDIOPATHIC STEATORRHŒA

Samuel Gee in 1888 gave what has proved to be a classical account of the "cœliac affection." Since that time there have been many reports of similar cases masquerading under almost as many names. The result has been confusion and ignorance, and it will be useful to many readers to have the comprehensive review of the literature which has now been made by Dr. Izod Bennett, Dr. Donald Hunter, and Dr. Janet Vaughan.[1] Their paper is, however, more than a review, for it contains the report of a series of cases which have been fully investigated. Their conclusion is that the disease, though probably closely allied to tropical sprue, is not identical with it, as some observers believe. On the other hand, since most cases begin in childhood as typical examples of cœliac disease, there appears to be no justification for the term "non-tropical sprue." The clinical picture is varied. Steatorrhœa and disturbances of calcium metabolism alone are common to the whole group; hence the adoption of the name "idiopathic steatorrhœa." Other features often seen are severe anæmia, cutaneous lesions, infantilism, clubbing of the fingers and toes, megacolon, and a flattened type of blood-sugar curve after the ingestion of glucose. The anæmia may be hypochromic, megalocytic and hyperchromic, or erythroblastic in type. Tetany, gross bony deformities, spontaneous fractures, bone pains, and lens opacities are the outward signs of the disordered calcium metabolism. Histological examination of bone from several cases proves the presence of osteoporosis and osteomalacia. As a rule the serum calcium is low, and calcium-balance estimations show high figures for fæcal and low figures for urinary output. Plasma phosphorus estimations are variable. Estimation of the fat in the stools shows no failure to split fat but an excessive excretion. Treatment is of necessity difficult, and varied in its success. It is often possible to relieve one symptom by appropriate methods without influencing others. The steatorrhœa must be controlled by a low fat diet, while increased intake of calcium and vitamin D may relieve the tetany and the pains due to osteomalacia. The anæmia responds satisfactorily to appropriate therapy. Large doses of

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[1] West African Med. Jour., 1928, ii., 96, 101.
[2] Malayan Med. Jour., 1931, vi., 116.
[3] THE LANCET, 1932, i., 235.

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[1] Quart. Jour. Med., October, 1932, p. 603.

irritability of the conjunctivæ, the vascular suffusion that ensues upon examination, and the profuse lacrymation on exposure to any degree of illumination. There is, however, no development of muco-pus as in conjunctivitis and no blepharitis. Later, as the acute symptoms abate, the chronic ones already noted remain.

As to prophylaxis, it may be taken as proved that the careful use of anti-glare spectacles is an efficient safeguard. The intensity of the visible rays is the main source of trouble and accordingly a moderately smoked glass gives much comfort, but any glass that is unnecessarily dark seems to have a depressing effect. And so, according to Livingston, do yellow and blue glasses. Numerous types of glass have been invented claiming to combat the harmful effects of certain invisible rays by their power to absorb them. As to the ultra-violet rays plane glass reduces them to a certain extent, a greater effect in this respect being obtained by Crookes's glass, Euphos, or others. The absorption of the infra-red rays is probably more important and less easily obtained. Tests with a glass named Infrex are favourably mentioned and so is Crookes's glass, but in Livingston's opinion the ideal balance that will embody adequate reduction of either end of the invisible spectrum with simultaneous optimum translucency for the visible spectrum has not so far been completely realised. Attention should be paid to the frames. The glasses should be large, oval, and directed downwards so as to engage reflected glare. The side-pieces should be dust-proof but not air-proof, and the bulk should be reduced as far as possible. Lastly the functional element often associated with these cases should not be forgotten. For many of them the darkened and silent room is the worst possible environment.

THE MEDICAL CURRICULUM ANALYSED

AT the last meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, Dr. W. G. Harvey read an interesting paper on that difficult topic, the teaching of special subjects in the medical course. The aim should be, he said, to shape students to be qualified to deal with disease to the safety and satisfaction of the public, and not to produce a body of all-round specialists. He urged that in dealing with any particular new subject which appeared as a candidate for inclusion in the curriculum, the particular reasons for its inclusion should be stated in the face of the difficulties of overcrowding with which the existing course is attended. Speaking as a dermatologist, Dr. Harvey was satisfied that this subject was sufficiently recognised in the ordinary course of training. Dr. R. R. Woods, dealing with instruction in diseases of the ear, nose, and throat, outlined a programme which would certainly raise the average of the students' practical knowledge, but which would require considerable time as well as anxious tuition if the training were to be practical. Dr. E. T. Freeman spoke of the necessity of training medical students thoroughly in respect to pulmonary tuberculosis, and found the facilities usually supplied wanting; while Dr. R. E. Steen emphasised the need for the better teaching of pædiatrics, where he was supported by Dr. W. R. F. Collis, who thought the subject especially badly taught in England. Dr. W. C. MacFetridge found that most practitioners now carried about a modern ophthalmoscope for use in diagnosis, and assumed to that extent that their training as students had enabled them to make practical use in general therapeutics of a difficult piece of special training. The president summed up the position by finding the student under the existing pattern of teaching swamped in detail which precluded the acquisition of a scientific outlook. The debate formed yet another illustration of the discontent with which the medical curriculum is regarded by an increasing number of medical men, and another argument for some general attempt for its revision

VITAMINS IN BUTTER

THE public has been coming more and more to value Australian and New Zealand butters for their flavour and cheapness. Nutritional experts, on their part, have long held that, as the Australasian cows are on pasture all the year round, these butters should, in theory, be well endowed with fat-soluble vitamins. It is interesting to have this opinion confirmed by an investigation carried out over a period of four years by Mr. S. S. Zilva, D.Sc., and his two colleagues, Miss Crawford and Miss Perry, the work being done at the Lister Institute under the auspices of the Medical Research Council and supported by a grant from the Empire Marketing Board.[1] Samples of butter from Australia and New Zealand, deriving from herds of different types, prepared in different ways, in summer and in winter, and kept for different periods were examined biologically for vitamins A and D. Comparable tests were also made on butter from English cows, fed in stall over the winter, on a diet of concentrates and receiving cod-liver oil. Anyone conversant with the conduct of such tests on animals will realise the labour entailed and the difficulty of making the results comparable over a series of years. In their tests for vitamin D the workers were fortunate in employing during their whole inquiry rats of approximately the same sensitiveness to rickets, so that their results are comparable throughout the whole period; for the vitamin-A tests the animal material was less uniform, and a general comparison is not perhaps so safely made.

In the Australian and New Zealand butters it was found that the vitamin content was uninfluenced by the mode of preparation or by the type of herd from which the milk was obtained. The influence of season was studied only with the New Zealand butters. The vitamin-A content, it was found, was the same in winter as in summer—not a surprising result, for the cows were on pasture, unsupplemented, at both seasons. The vitamin-D content, on the other hand, was distinctly lower in the winter butter, a diminution to be correlated with the greater distance of the sun from the zenith at that season; the period of unclouded sunshine was on an average six hours a day in the winter, against nine hours in the summer. Storage at a low temperature, even for two years, caused only a slight diminution of vitamin content, so that the comparatively short period of storage between the making of the butter on the other side of the world and its marketing in England is not to be regarded as having any deleterious influence.

On turning to the English butter from cows receiving cod-liver oil, the results suggest that even with this supplement, the vitamin-D value is not as high as that of New Zealand summer butter, being nearer to that of the New Zealand winter butter. For vitamin A it is noticeable, assuming that a general comparison of all the results is at least roughly valid,

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[1] Crawford, M. E. F., Perry, E. O. V., and Zilva, S. S.: Vitamin Content of Australian, New Zealand, and English Butters Med. Research Counc., Spec. Rep. Ser. No. 175. H.M. Stationery Office. 1932. Pp. 50. 1s.

SPECIAL ARTICLES

PNEUMOCONIOSIS

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OUR object is primarily to direct attention to those types of pneumoconiosis which arise in connexion with the grinding and polishing of metals by artificial abrasives where the work is not included in the schedule of occupations for which compensation can be claimed when disability or death ensues. Often this disease is indistinguishable from silicosis when investigated, apart of course from the information to be derived from the industrial history. It produces disablement similar to that caused by silicosis and is frequently associated with pulmonary tuberculosis; but, notwithstanding this, the patient is not entitled to compensation for disablement, nor do his dependants receive recompense in the event of his death.

Within recent years silicosis has been included amongst the diseases for which affected workers, under certain conditions, may claim compensation either for death or disablement. Under the Workmen's Compensation Act regulations dealing with silicosis were issued in the Metal Grinding Industries (Silicosis) Scheme, 1927, applying to the grinding of metals by means of a grindstone, glazing when carried on in the same room as grinding, and the racing of grindstones. Compensation may be claimed for the death or disablement by silicosis of a worker engaged in an occupation scheduled in the above-mentioned schemes. In the statutory rules and orders which provide compensation the term "silicosis" is confined to disease brought about by the inhalation of silica dust as free silica (SiO_2). The silica dust may be mixed with other dusts but must be chemically free before the term silicosis can be accepted in its legal sense so far as compensation is concerned.

None of the regulations take cognisance of disease arising as a result of grinding or polishing metals with *artificial abrasives*.

PNEUMOCONIOSIS IN NON-SCHEDULED OCCUPATIONS

There are occupations not included in the schedule for compensation in which the employees develop a pulmonary condition which we have found to resemble silicosis clinically, radiographically and pathologically. Because the employments in which these cases occur are not scheduled, those affected cannot claim compensation under the present statutory orders and regulations. This applies to patients we have met suffering from pneumoconiosis arising from the prolonged use of emery in varied forms, from the use of "compo" and the calico mop, and from employments where nothing has been revealed in the industrial history to show that the individual had been engaged at any time in one or other of those scheduled. The following cases of pneumoconiosis are examples.

CASE 1. *Pneumoconiosis indistinguishable from silicosis occurring in a grease-mopper, and associated with pulmonary tuberculosis.*—Man, aged 38, polisher. Notified as pulmonary tuberculosis Jan. 8th, 1931. History of cough and expectoration for 12 months. Lassitude and loss of weight. On admission to the sanatorium there were signs of extensive pulmonary disease, impaired resonance accompanied by râles over the whole of the right lung and the upper half of the left lung, with sputum containing tubercle bacilli. He went downhill rapidly and died. Patient stated that he had worked for 23 years polishing cranks and wheels with calico mop and "compo."

Post-mortem examination revealed extensive tuberculous disease of the right lung, with a large cavity in the upper lobe; the left lung was slightly less affected, but contained many small cavities. In the left lung there were also numerous plaques of fibrous tissue near the surface, and several more deeply situated.

Some specimens were sent for *microscopical examination* to Prof. Haswell Wilson, who reported as follows: "Sections have been prepared from two portions of the lung tissue. The changes are essentially the same in both. The pleura is thickened, and there are a number of fibrotic areas in the lung substance. In both these situations there are numerous granules of pigment; some of these are black in colour, even when in a fine state of subdivision, and are obviously carbon, but the majority show the greenish tinge associated with particles of silica. Endarteritis has occurred, and the centre of the fibrotic area is necrotic. Many of the adjacent air vesicles show chronic catarrhal change, and contain desquamated epithelial cells in which granules of pigment are seen. A few vesicles are involved in the edges of the fibrotic areas and show collapse and degradation of the epithelial cells to the cuboidal type. In places there are foci of acute tuberculosis with catarrh and caseation. The histological picture is that of pneumoconiosis with acute tuberculosis, and is indistinguishable from that seen in silicosis."

CASE 2. *Pneumoconiosis indistinguishable from silicosis and associated with pulmonary tuberculosis.*—Man, aged 50, labourer. Admitted to hospital July 21st, 1930, with six months' history of cough and expectoration, loss of flesh, and debility. Tubercle bacilli present in sputum, impaired resonance upper half both lungs, and scattered râles throughout both lungs. Radiogram showed extensive mottling of both lungs. Patient was transferred to the sanatorium, took his discharge, became worse, was readmitted, and died on Nov. 28th, 1930.

We were unable in this case to obtain any definite history of exposure to silica dust. The man had spent most of his working life as a labourer in various employments. From the age of 16 to 26 he had worked as a turner in the cycle trade. He next spent 12 months as a builder's labourer, demolishing old buildings, followed by nine years' work as a warehouseman. He then spent 15 months as a labourer in a rubber works. During the war he served in the infantry from 1915 to 1919, and from 1919 to 1922 he was engaged on exhumation work in France. After two years' unemployment he got a job as navvy on road work, and continued at this for four years.

Post-mortem examination.—The pleura was densely adherent to the chest wall, over the whole of both lungs. The lungs on section were tough and indiarubber like; pleuræ and interlobar septa were much thickened. Both lungs showed numerous intermingled dark patches of fibrosis and light grey patches of tubercle. The tracheo-bronchial glands were enlarged, and on section almost black, with numerous grey tubercles, and were hard and gritty to the knife.

Portions of the lungs and glands were sent for *microscopical examination* to Prof. Haswell Wilson, who reported as follows: "There is, in my opinion, definite evidence of pneumoconiosis. In addition to the changes associated with the chronic tuberculous process there are areas of fibrosis in which there are abundant granules of pigment. These appear black in the aggregate, but under the high power have the greenish colour which is found with particles of stone. In any case the fibrosis is more extensive than is found in a pure anthracosis."

CASE 3. *Pneumoconiosis indistinguishable from silicosis in an emery-wheel grinder.*—Man, aged 32, notified as pulmonary tuberculosis April 8th, 1931. Tubercle bacilli present in sputum. Radiogram taken on April 29th showed dense infiltration of the upper half of the left lung and scattered mottling of the remainder; fine flocculent mottling over middle third of the right lung. He was admitted to a sanatorium on May 12th and died on Nov. 9th.

This man had served in the army after leaving schoo until he was demobilised in 1919, when he started work in a motor factory. For the past nine years he had worked as a grinder using an emery wheel, which was always run wet, except for the first four or five months after he began this work.

After death portions of the lungs were forwarded to Prof. Haswell Wilson for *histological examination.* His iron should be given in the hypochromic or erythroblastic types and marmite in the hyperchromic type. No constant anatomical lesions, apart from the osteomalacia, have been found at autopsy. The authors conclude that the clinical picture is dependent upon a disturbance of gastro-intestinal function resulting in deficient production, absorption or utilisation of one or more essential factors.

THE PROBLEM OF THE DEAF

THERE are at the present time about 34,000 deaf-and-dumb persons in England and Wales, of whom some 3000 are under 16 years of age. Dr. A. Eichholz, late chief medical inspector to the Board of Education, has made a study of these people during the years 1930 to 1932 which has just been published.[1] In his investigation he has aimed at covering the field of deaf welfare from three points of view—education, social welfare, and industrial conditions. Particularly he has endeavoured to answer the question how far the burden of deafness carries with it a handicap in the attempt to gain a satisfactory mode of life, and to what extent this handicap may be averted by education and training, or by extension of adult welfare. The mere record of employment obtained by school leavers does not, Dr. Eichholz has found, suffice to enable him to draw valid conclusions about the conditions in which the deaf-and-dumb actually live; it has been necessary for this purpose to tap two other sources of information—namely, the extent of poor-law relief and the experience of welfare societies. Happily the number of deaf-and-dumb children is showing a steady decrease year by year, and there were 760 vacancies among some 4700 places provided in certified schools for deaf children. At present the administration of public health is achieving much to arrest child deafness and post-natal deaf-mutism, but Dr. Eichholz does not surmise whether the group of born-deaf can ever be reduced. Generally speaking the deaf-and-dumb suffer little, if at all, from a physical point of view in their capacity to engage in industrial life. Nevertheless, on the social side temperamental conditions due to isolation, misunderstandings in their contacts with other people, certain difficulties in securing and keeping employment, and a general lack of public sympathy tend to throw the deaf-and-dumb together in order to secure the companionship from which they are otherwise debarred. For this reason deaf-mute marriages are part of their normal life, and Dr. Eichholz does not think it practicable to enjoin abstinence from parenthood upon persons who are able to maintain themselves, to manage their own affairs, and to discharge all the other functions of civil life. Temperamental inequalities are, however, reflected in the proportion of deaf-mutes suffering from mental diseases—seven times as great as that of hearing persons, and of deaf-mute inmates of public institutions, also a seven-fold excess. Domiciliary relief, on the other hand, is little higher among deaf-and-dumb persons than in the general population. Based on the data of his exhaustive investigation Dr. Eichholz would like the Ministry of Health to urge on local sanitary authorities closer attention to the early and continuous treatment of infants suffering from ear defects, and the Board of Education to invite local education authorities to improve their detection of defects and to arrange for the supervision of all cases of detected ear defect by practitioners with otological experience. Finally, being of opinion that more precise knowledge about deafness and deaf-mutism is required, he suggests that the Ministry of Health and the Medical Research Council should take steps to institute a study into the age-incidence, causes, and treatment of ear defect.

BABINSKI

THE loss which the French school of neurology has sustained by the death of Joseph François Felix Babinski is of a very special kind. Tall and handsome, of impressive appearance, none came in contact with him who did not fall under the spell of his personality. For a long period he was taken by the foreigner to be most representative of that brilliant galaxy of men who followed in the footsteps of Charcot, were imbued with his spirit of clinical research, and maintained the tradition of which he was the founder. It would be a mistaken idea to imagine that Babinski's pre-eminence was largely due to the association of his name with the extensor plantar reflex, which he was the first to describe, however much the fact tended to popularise him and his work. That discovery doubtless familiarised many with his attainments, but he did a great deal more of equally enduring value. His studies of hysteria and of so-called reflex paralysis were remarkable alike for the candour with which he discarded theories once warmly cherished by himself and for his endeavour to bridge the gap supposed to exist between the organic and the functional sides of neurology. Advances of recent years in the study of the psychoneuroses from the psychological side have tended to throw into the shade other aspects of these disorders, for which a purely psychological approach does not suffice; and Babinski, in his investigation of the phenomena of reflex paralysis, adopted an empirical line of which more will yet be heard. Throughout his life he was a master clinician, less dependent on neuropathology and the laboratory than many of his contemporaries, and convinced that further discoveries would reward those who pursued the same ideal as his own. At the International Medical Congress held in London the year before the war his was the outstanding figure in his own division, and worthily he carried his honours. Though he never succeeded to the Charcot chair in Paris, this in no way detracted from his celebrity. None of Charcot's pupils grappled with both organic and functional problems with the same facility as he; none is surer to be remembered for his accomplishment in the field of neurology.

THE Lloyd Roberts lecture of the Royal College of Physicians of London will be given at the College, Pall Mall East, at 5 P.M. on Tuesday next, Nov. 22nd, by Prof. L. P. Jacks, principal of Manchester College, Oxford. His subject will be the Liberal Education of the Body.

Sir George Newman's Harveian Oration, "The Debt of Preventive Medicine to Harvey and the College of Physicians," has been published by British Periodicals, Ltd., 19, Cursitor-street, London, E.C., price 1s.

INTERNATIONAL SOCIETY FOR MICROBIOLOGY.—The international congress of this society, which was to have taken place in Berlin in 1933, under the presidency of Prof. Hahn, is, owing to existing world conditions, now definitely postponed to 1934.

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[1] A Study of the Deaf in England and Wales, 1930 to 1932. Being a Report by Dr. A. Eichholz, C.B.E., to the Minister of Health and the President of the Board of Education. H.M. Stationery Office. Pp. 206. 3s.

will suffice for our present purpose to say that one of the ultimate effects of the inhalation of minute particles of silica or siliceous materials is the production of fibrous tissue in the areas of lung affected and, so long as their action is exerted, the formation of fibrous tissue proceeds. This is particularly the case in silicosis. As the fibrotic changes in the lung increase in area and density, the physiological function of the organ is diminished and contraction, with resulting displacement of the parts, takes place, accompanied by the appearance of areas of compensatory emphysema, and in some cases also of bronchiectasis.

The mere existence of silicosis and other forms of pneumoconiosis is obviously a serious matter for those affected, for these conditions cause varying degrees of discomfort and disablement, and occasionally death. Moreover, in many cases, tuberculosis of the lung is superimposed or associated, which adds to the gravity of the condition so far as the maintenance of working capacity and duration of life are concerned.

Middleton [1] has described three conditions found in the lungs of workers employed in the grinding of metals :—

(1) Silicosis, a form of fibrosis primarily the result of the inhalation of fine particles of silica, in the form of fractured crystalline quartz, and with a definite relationship between its causation and the duration of employment in the industries; related also to a high incidence of and mortality from pulmonary tuberculosis; met with especially in the grinders on sandstone.

(2) A fibrosis, which is found as a primary result of the inhalation of minute particles of dust of such substances as emery, and with a definite relationship between its causation and the duration of employment in the industries associated with exposure to such dust in excessive quantities.

(3) A fibrosis, occurring as a secondary result of some other pathological change, arising either (*a*) as a sequela of a chronic bronchitis or other inflammatory change as the result of dust inhalation; or (*b*) as a sequela of some adventitious process not associated with dust inhalation, but due to antecedent or independent disease or injury.

It is therefore recognised that emery dust may give rise to pulmonary fibrosis, though this disability is apparently not scheduled for compensation.

The following Table shows the Registrar-General's returns for the years 1921–23 for the mortality from respiratory diseases among metal polishers, buffers, moppers, and glazers, compared with that among all occupied and retired males :—

Mortality from Respiratory Diseases in Certain Trades

Death-rate per 100,000.	In age-groups—							
	16–	20–	25–	35–	45–	55–	65–	70–
Bronchitis—								
Polishers, &c. ..	—	26	—	26	74	457	1263	2857
Occupied males ..	1	3	6	20	56	191	509	1771
Pneumonia—								
Polishers, &c. ..	68	77	26	183	277	254	253	317
Occupied males ..	21	28	40	72	103	170	276	472
Pulm. tuber.—								
Polishers, &c. ..	68	231	233	404	351	356	758	—
Occupied males ..	69	136	133	160	166	150	114	64

The comparative mortality figure, all occupied and retired males being taken as 1000, is as follows :—

	Occupied males.	Polishers, &c.
Bronchitis	1000	1962
Pneumonia	1000	2026
Pulmonary tuberculosis ..	1000	2124

The mortality from bronchitis shows a marked excess amongst polishers after the age of 50, while that due to pneumonia is excessive among polishers in middle age, 35 to 55. The death-rate from pulmonary tuberculosis shows excess among polishers at all ages from 20 to 70.

PROPHYLAXIS

It is advisable that workers in occupations and processes known to cause pneumoconiosis should be made acquainted with the risks of their employment. The required information might be imparted in the form of short addresses or talks couched in simple terms capable of being understood by them. Welfare workers should be instructed in preventive measures, and might supervise hygienic methods and, where necessary, correct faulty ones among employees. Such a procedure would be difficult at its initiation, but, if persisted in, could not but benefit all concerned.

There is little doubt that many workers are unwilling to use the respirators and helmets provided for their protection when working at some of the scheduled occupations. Their objections are varied, but many ignore precautions from sheer ignorance of the serious damage that may result from their neglect; others hold the view that to use a helmet or a respirator might create an impression amongst their fellow-workers that they were unduly nervous.

It is now agreed that entrants to the employments from which silicosis may arise should be carefully selected after medical examination, but the examination should include a radioscopic or radiographic investigation, preferably the latter. If silicosis and other forms of pneumoconiosis are to be recognised early, at a stage when removal from the causative agent is advisable if total disablement is to be prevented, annual examinations of the workers ought to be compulsory; nor could these examinations be regarded as effective if radiographic investigation were omitted.

It has been the lot of one of us to spend many hours in the coroner's court giving evidence on inquiries into the cause of death of persons, employed in scheduled occupations, who were suspected of having died from silicosis; and we would like to say to those interested in the prevention of pulmonary disease due to the inhalation of trade dusts, who may be possessed of patience and an analytical mind, that such occasions provide valuable opportunity for the furtherance of one's education in the ætiology of the disease. As a result of this experience we have heard that articles too large to be accommodated in sandblasting cabinets with the door closed are sometimes submitted to the blasting process with the door open, which is not good for the blaster. Also where the blaster is paid by piece rates there is a pecuniary advantage, though an accompanying and often unappreciated personal risk, in opening the cabinet to remove the articles subjected to blasting before the resultant dust has completely settled. If the attendant risks arising from these two causes are already met by existing regulations, it is obvious that the workers would receive more adequate protection from their rigorous enforcement; on the other hand, if the regulations do not cover the points we have mentioned, it is in the interests of the worker that they should.

In some factories in Birmingham where sandblasting is undertaken, the use of sand has been discontinued and chilled iron shot are used instead. For some types of work the innovation is said not to give such good results as the older method—a point upon which we do not feel competent to express report was as follows: "Under a low-power magnification the lung tissue is seen to be studded throughout by small nodular masses about 1 mm. in diameter. In places these merge into strands of dense fibrous tissue along the connective tissue septa and in relation to the vessels and bronchi. Towards the base of one lung there is a mass of dense fibrous tissue in which a number of lymphatic glands are embedded. Under a higher magnification these nodules are found to be (1) laminated nodules of fibrous tissue, many of which contain greenish granules in the interstices; and (2) small chronic tubercles with caseation and giant cells. There is a general increase in the connective tissue septa and in the tissues related to the perivascular and peribronchial lymphatics, and in this also numerous greenish granules together with jet black particles of carbon are seen. In the denser areas towards the root of the lung there is much more extensive fibrosis, which has destroyed much of the lung substance. Many air vesicles are embedded in this tissue. These are collapsed and their lining epithelium has reverted to a cubical type of cell. Granules of silica are scattered through this tissue, together with occasional tubercles, and there are some large areas of necrosis in which much polymorphonuclear infiltration has occurred. The glands at the root of the lung are embedded in dense cicatricial fibrous tissue. They show chronic inflammatory hyperplasia with much desquamation of the endothelium of the sinuses. Occasional [illegible] just visible greenish particles are s[illegible] sinuses, but although there is some carbon deposit there is no generalised deposition of silica in the glands and no *fibrosis. A few small tubercles are present in the glands.* The appearances in the lungs are those of diffuse silicosis, very extensive in its distribution, but only producing a limited destruction of the lung tissue, except at the base, where there is extreme fibrosis. In addition, there are numerous chronic tuberculous nodules which, however, from the relative cellularity of the granulation tissue composing them, would appear to be of more recent date than the silicotic nodules."

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[1] Macklin, E. N., and Middleton, E. N.: Report on the grinding of metals and cleaning of castings, with special reference to the effects of dust inhalation upon the workers. 1923.

CASE 4. *Pneumoconiosis with associated pulmonary tuberculosis occurring in an emery-wheel grinder.*—Man, aged 44, notified as pulmonary tuberculosis on August 6th, 1931. Tubercle bacilli present in sputum. Admitted to sanatorium on August 27th. Radiogram on Sept. 10th showed flocculent mottling uniformly over lower two-thirds of both lungs, suggestive of a pneumoconiosis. On discharge from sanatorium on Nov. 18th physical signs suggested a diffuse fibrosis of both lungs, most marked in the lower two-thirds of right lung and lower third of left lung.

This man had worked as a grinder at a carriage and wagon works for ten years; he stated he had used an emery wheel all the time. He had ceased this work five years ago, and had since worked as a navvy.

CASE 5. *Pneumoconiosis with associated pulmonary tuberculosis after 30 years' exposure to emery dust.*—Man, aged 50, polisher, notified as pulmonary tuberculosis on March 31st, 1930. Examination on April 8th showed dullness and râles over right upper lobe; general condition good; tubercle bacilli present in sputum. Radiogram showed opacity at right apex with a ring shadow just below the clavicle and mottling of the remainder of the upper half of right lung; throughout the rest of the right lung and the whole of the left lung the striæ were much accentuated, with small intermingled opacities.

Since the age of 17 he had worked as a metal polisher in various workshops in Birmingham, always using an emery bob or mop, except for a period of three years about the age of 30, when he had used a plain felt bob which was fed with sand during the polishing process. He stated that he had never worked in the same room in which any sandstone grinding was carried on. Excluding three years' army service (1915–18) he had done 30 years' work as a polisher. Except for a persistent cough since the age of 30, his general health had been good until the autumn of 1929, when he had begun to suffer from dyspnœa and increased cough. He had had to give up work in March, 1930.

Re-examination on Feb. 26th, 1931, showed impaired resonance over the upper half of the right lung and bronchial breath sounds at the right apex, but no râles: chest expansion 1½ inches; weight and general condition maintained. He felt fairly well except for tightness of the chest and dyspnœa on exertion. He had a morning cough with some expectoration and tubercle bacilli were still present in the sputum.

A radiogram showed no change since April 8th, 1930, except for increased fibrosis and density of the infiltration in the right upper lobe.

His satisfactory general progress, and the absence of any material change in the multiple small opacities shown on the radiogram after the lapse of a period of ten months, suggests that the lung condition was one of pneumoconiosis with localised tuberculous disease of the upper part of the right lung, rather than a miliary tuberculosis.

CASE 6. *Pneumoconiosis associated with tuberculosis in an emery-wheel grinder.*—Male, aged 29, a universal grinder, was first examined on April 23rd, 1931. He gave two to three months' history of cough, expectoration, dyspnœa, loss of weight, and debility; there was loss of resonance and râles over the upper half of both lungs, and tubercle bacilli were present in the sputum. Radiographic examination showed dense mottling and cavitation of the upper half of both lungs, and some coarse mottling of the left base. He was admitted to a sanatorium on May 13th and died on Jan. 23rd, 1932.

This man had been employed as a grinder since the age of 14—i.e., for 15 years. During the whole of this time he is said to have worked with the emery wheel.

Prof. Haswell Wilson's report on this patient's lungs is as follows:—

Post-mortem.—"The pleural covering of both lungs is thickened and opaque. The left upper lobe is the seat of a very large chronic tuberculous cavity. The apex of the lower lobe is permeated by solid greyish tissue with darker pigmented areas. Scattered through this there are numerous tubercles of various sizes, and also a number of small cavities, evidently of more recent date than that in the upper lobe. The base of the lung is œdematous and contains a number of caseous tubercles. The right lung shows changes of similar nature and distribution, but rather less extensive than those in the left side. The bronchial glands are deeply pigmented and firm, but not gritty in consistence; a few small tubercles are present.

"*Microscopical section* of nine blocks from different parts *of the lungs and glands have been examined.* The lung substance generally is the seat of patchy fibrosis, and the pleura is much thickened. The fibrous areas in the lungs are all associated with the presence of minute granules which have a definite greenish tinge under the high power and are therefore not carbon. The nodules are dense and hyaline in appearance, and in places there is a suggestion of lamination. The granules are largest and are present in greatest numbers at the periphery of the nodules and in the centre, where in places necrosis is occurring; they are only just visible and appear to be undergoing solution. In some parts of the lung, especially in the apex of the left lower lobe, these fibrotic areas are almost confluent and involve almost the whole of the sections. There is a considerable degree of fibrosis in the perivascular lymphatics. Everywhere there is much catarrh of the vesicles, and there are many phagocytes laden with pigment granules. There is also extensive tuberculosis. With the exception of the large chronic cavity in the left upper lobe, the lesions are all of recent origin, with caseation of the contents of the air vesicles and destruction of their walls. The glands at the root of the lungs contain a few recent tubercles. There is a fair amount of pigmented granules, some of which are carbon, and although there is some fibrosis this is not so definitely related to the granules as it is in the lung substance. I am of opinion that the lungs in this case show the changes of pneumoconiosis associated with localised chronic and widespread acute tuberculous lesions."

It is probable that similar cases pass more or less unnoticed, except perhaps by medical men specially interested in pulmonary industrial diseases. This is unsatisfactory, and regrettable, for two reasons: *it* perpetuates a state of affairs under which the affected individuals fail to obtain compensation and, so far as we are aware, it does nothing to place information concerning their physical or industrial conditions in the hands of those whose care it is to see that workers in dangerous occupations are adequately protected.

If a person becomes disabled because of pneumoconiosis he should be eligible for compensation. The decision whether a trade or process should be included in the schedule entitling disabled workers to compensation ought not necessarily to depend on the fact that the associated dust contains free silica in any given proportion, but rather upon the fact that exposure to the dust produced in that employment can be shown to have caused a condition of pneumoconiosis, giving rise to disablement.

SOME EFFECTS OF THE INHALATION OF SILICA AND OTHER DUSTS

Before the condition recognised pathologically as pneumoconiosis can be produced the particles of dust inhaled must find their way into the alveoli; they are therefore very minute. Without entering into a detailed description of the affected lung, it water-supply was available. The council still insisted that the caravan-dwellers constituted a menace to the health of the neighbourhood. It was alleged that they committed indecent acts on neighbouring properties. At the relation of the rural district council the Attorney-General asked for an injunction which Mr. Justice Bennett granted. The judge said the defendant was liable if he allowed his land to be used in a way which involved interference with his neighbours' convenience. Had he omitted some legal duty? He had put his land to an abnormal use and was liable if the health and comfort of his neighbours thereby suffered. The principle of Fletcher *v.* Rylands was the only rule under which he could be held liable. Some of the caravanners, said the judge, were quite respectable people, but the defendant had attracted others with not so high a standard.

Fletcher *v.* Rylands (1868) is one of the most important decisions alike for the law student and the legal practitioner. Some mill-owners constructed a reservoir. They employed a competent engineer and good workmen. In the course of construction some old mine-shafts were found and carefully filled up. When, however, the reservoir was completed and the water was run in, leakage occurred into the plaintiff's adjacent mines. The mill-owners denied liability, contending that they had made their reservoir with competent construction. It was held, however, that apart from any question of negligence, anyone who brings on to his land anything which, if it should escape, may damage his neighbour, does so at his peril and must compensate his neighbour if damage occurs. Mr. Corke's caravan-dwellers were the *equivalent of Messrs. Rylands' reservoir.* To turn a Bromley brick-field into a caravanners' encampment is an exceptional use of the land.

CONGRESS ON DISORDERS OF DIGESTION AND METABOLISM

(FROM OUR VIENNA CORRESPONDENT)

DURING the first week of October the Deutsche Gesellschaft für Verdauungs- und Stoffwechselkrankheiten met in Vienna under the chairmanship of Prof. Wilhelm Falta. Despite the unfavourable conditions prevailing in Central Europe there was a very large attendance. The society, which was founded in 1914, and has at present nearly 600 members, avoids one-sided specialisation by arranging discussions on "borderland" subjects at its meetings, and thus invites the physiologist, pharmacist, chemist, and pathologist to coöperate with the surgeon and internal physician. This year's meeting was conducted on the same lines as the last meetings. The subjects were presented in three sections; each was introduced by three or four eminent professors, who dealt with it from the standpoint of the pathologist, the surgeon, and the internist, and where necessary the chemist or the pharmacologist also gave an introductory address.

ABSORPTION

The first subject was absorption, enteral and parenteral. Prof. G. Mansfeld (Hungary), speaking as a pharmacologist, referred first to the important part played by the skin, chiefly through electro-chemical changes in the subcutis, which regulate osmosis. He pointed out that many dangerous gases are absorbed more easily by the skin than by the lungs—a fact well known in gas warfare. The respiratory epithelium also absorbs certain gases very quickly, while substances like nicotine and insulin are absorbed by inhalation and rapidly transmitted to the blood stream. As regards the stomach, the remarkable fact had been ascertained that the gastric juice distinctly lowers the velocity of absorption in the stomach itself, thus ensuring complete digestion.

Prof. W. Nonnenbruch (Prague), after reviewing what is known about the mucous membrane of the intestines as an absorbing organ, proceeded to show that irritation (or inflammation) of the walls of the alimentary canal tends to promote and increase the absorption of fat. He pointed out that the function of the villi is an important but not an indispensable factor in absorption, and that the internal secretion of the pancreas can be regarded as affecting fat-absorption no longer. The importance of the spleen in this respect is far greater.

Prof. W. Denk (Vienna) described how absorption takes place through the subcutaneous connective tissue and the peritoneum, how toxic substances are absorbed from occluded or gangrenous portions of the gut, and how extravasates (hæmatoma) are absorbed: the differences of the absorptive power of different sections of the gut were also shown. This factor is important in estimating the extent of absorbing surface that can be resected without injurious consequences. Prof. Denk laid stress on the necessity for further study of the problems presented by normal and pathological absorption.

In the discussion following these reports, several well-known workers presented interesting papers relating to this problem. Amongst them may be mentioned Prof. W. Zweig (Vienna), who has made a special study of the fate of radium emanation (radon) in the body. He estimates that within four hours the entire quantity of the ingested emanation is excreted by expiration through the lungs; the stomach absorbs only a small proportion of it. A paper by Dr. E. Urbach (Vienna) dealt with allergic conditions due to alimentary absorption, and the changes produced thereby in the skin. He has found that treatment with propeptones has given excellent results in many stubborn cases (vasomotor rhinitis).

INSULIN IN DIABETES

The second subject for discussion was the problems of insulin and diabetes mellitus. The experimental side was discussed by Prof. Staub (Bâle). He distinguished between the action of the pancreatic hormone and adrenaline, and put forward a new thesis, based on his experiments, attributing the diabetic condition to a loss of tonus of the parasympathetic system, produced by insulin, which he takes to be a hormone. Dr. Herxheimer (Wiesbaden) explained that the chief feature of the morbid anatomy of diabetes is the diminution of the number of the "islet cells" (Langerhans), their "hardening" and hyalinisation. These islet cells can be regenerated from the pancreatic gland tissue, as shown by Mansfeld, but they only produce the hormone, not the other gland tissue. Operative procedure for the cure of diabetic conditions has already been performed in the United States, but the results are not satisfactory.

The action of insulin was discussed in the report presented by Prof. Falta (Vienna). His wide experience has convinced him that it is a characteristic of real diabetes that small doses of insulin may completely restore the balance of metabolism, whilst other kinds of glycosuria are more resistant to the an opinion. But, viewed from the prophylactic side when dealing with silicosis, there can be no room for doubt that the substitution of metallic shot for sand is a distinct advance and one to be encouraged, and it is gratifying to know that many factory owners have readily adopted it in the interests of their employees.

We hesitate to suggest that pneumoconiosis of every description should be made notifiable, because our experience suggests that if notification is to be successful, it must carry with it treatment, supervision, and some measure of protection for the patients. No practitioner can be expected to notify his patients unless something of benefit to the patient results, but we do think that notification of all forms of pneumoconiosis by the medical officers associated with tuberculosis dispensaries or clinics would reveal a hitherto unsuspected amount of this disease in some of our large industrial areas.

SUMMARY

1. The precautions at present taken to safeguard the class of worker we have discussed appear to be either insufficiently effective or inadequately enforced.
2. The inhalation of dusts from occupations other than those included in the schedules may cause pulmonary fibrosis and produce a condition clinically and pathologically indistinguishable from silicosis.
3. It seems advisable to safeguard those who are employed in grinding and polishing metals with artificial abrasives.
4. The necessity for necropsies on those suspected of pneumoconiosis, when opportunity arises, is obvious. When undertaken by skilled pathologists, information as to the prevalence of this disease would be forthcoming.

Reports upon our pathological specimens were made by Prof. Haswell Wilson, of the University of Birmingham, to whom we express our indebtedness.

MEDICINE AND THE LAW

Surgeon and Patient's Consent

WHEN a specified surgical operation is being performed with the patient's consent, it sometimes happens that some more extensive operation is found necessary. The legal position of the surgeon in these circumstances was discussed by Mr. Musgrave Woodman in his presidential address, summarised in our columns last week. A few days earlier the decision of a French court had dealt with a similar situation. Dr. A had been consulted three years ago by a woman with regard to a swelling in the breast. He diagnosed it as a small tumour which he thought was not malignant; he advised operation. A surgeon removed the tumour and on examination believed the case to be one of cancer. He communicated his belief to the patient's husband who was present; the latter told him to act for the best. Apparently further operation was thereupon carried out. Afterwards, when the patient became aware of the extent of what had been done and when she ascertained the conditions in which her husband had given authority, she sued the surgeon for 200,000 francs damages. Thereupon Dr. A, on his side, complained that his professional reputation was seriously affected; he consequently counterclaimed against the patient's husband for damages to the same amount. The case came before the civil tribunal in 1930. By a procedure which may cause English doctors to envy their French colleagues, the tribunal referred the dispute to a commission of three experts, Prof. Balthazar, Prof. Durieux, and Prof. Duvoir. Before the experts had completed their report the patient died, having undergone a fresh operation in the meantime. Before her death, however, she had made her husband promise to continue the litigation in the name of himself and their children. The experts eventually declared that Dr. A was right in what he did. He did not think the tumour malignant; it was proper not to disturb the patient's mind; it was easy to make a mistake in a diagnosis; many malignant tumours begin as non-malignant. When the husband told the surgeon to act for the best he gave a definite consent; the operation which followed was proper. The patient, being then still under the influence of the anæsthetic, was not in a fit state to make a decision. The authority given by the husband was, it was true, insufficient, because as soon as it was a question of life and death, *le droit naturel* prevailed over the civil code. Ought Dr. A then to have waited till the patient regained conciousness? No; the husband might, perhaps, say that natural emotion impaired his ability to give a decision carrying full legal weight, but the patient returning to consciousness after the operation was in a still less favourable condition to form a decision in a matter of urgency. Not only was Dr. A not at fault; his conduct conformed strictly with the dictates of professional practice and also with the law which recognises cases of urgency.

The French decision is interesting despite the differences of French law and legal procedure, and of the idea of responsibility as between doctor and surgeon. The chief English decision is that of Beatty *v.* Cullingsworth (operation for removal of ovarian cyst). It will be remembered that the patient told the surgeon she was going to be married; "if you find both ovaries diseased, you must remove neither." He assured her he would not remove anything he could help. The right ovary was found diseased and was removed. The left was found affected by the same disease in an early stage; the surgeon removed it, thinking it necessary to save the patient's life. She sued him for negligence; the jury found in favour of the surgeon. This result prevented discussion of the legal position on appeal. According to the summing-up of Hawkins, J., who tried the case, the surgeon had always told the patient that she must give him a free hand. If, said the judge, the jury thought that tacit consent had been given, they must find for the surgeon. This question of consent was, of course, the main fact in dispute.

Caravan-dwellers as a Nuisance

Many local authorities have taken powers by local Act to control and supervise dwellers in caravans and other temporary structures. The Surrey County Council's Act of 1931, is a specially elaborate form of such legislation. There remains also the general law to be enforced as is shown by the case of Attorney General *v.* Corke, decided last July and now available in the law reports. The defendant allowed gipsies and others to settle in his disused brick-field, in the rural district of Bromley. He charged them weekly sums varying from 5*s.* to 10*s.*, and a population of about 240 persons was thus collected. The local authority served notice on the defendant under section 94 of the Public Health Act, requiring abatement of the nuisance. He then provided eight water-closets for the brick-field, for which a sufficient further than the laboratory. Others have become invaluable, such as the sera against plague and cholera. The value of antitetanic serum was demonstrated during the Great War, and Dopter's antimeningococcal serum provided a remedy for a disease hitherto always considered fatal. Vaillard's serum against bacillary dysentery, and the serotherapy of yellow fever, of hæmorrhagic spirochætosis, and of infantile paralysis may be mentioned in passing. Turning from specific to crossed serotherapy, Richet gave as a first example of the latter the treatment of snake-bite with antitetanic serum, introduced by Roux and Calmette. Though such crossed serotherapy may not yet have emerged from the realms of empiricism, it may in Richet's opinion have a great future. The same applies, he thinks, to the treatment of syphilis with sera, and "it is again probable that the last word has not been said of the serum treatment of cancer, which since 1895 has given exceedingly encouraging results"; and he went on to state his conviction "that the investigations undertaken on every side with so much ardour in clearing up the ætiology of this disease will find their application in the preparation of a curative serum."

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE PRESENT METHOD OF MAKING LOCAL APPOINTMENTS

In response to a query from the Irish Medical Committee, the Appointments Commission has made a statement of its present procedure in reference to appointments in the service of local authorities. The procedure is given thus:

> In accordance with Section 6 (3) of the Local Authorities (Officers and Employees) Act, 1926, the Commissioners may recommend one, two, or more persons for appointment to an office to which the Act applies. The Commissioners have recently decided that where a local authority wishes to have some freedom of choice in appointments, they will send it the names of the candidates who have been placed first and second, or, if the local authority so desires, the names of the first three candidates. The names in either case will be arranged in alphabetical order. Accordingly, it is now the practice of the Commissioners to ask each local authority whether it desires to have one, two, or three names submitted to it, and to state in the particulars of appointment issued to prospective candidates whether one, two, or three persons will be recommended to the respective local authorities in connexion with the various posts to be filled.

Up to a few months ago the Commission, with the help of a selection board, selected one candidate in each case, and the local authority had no option but to appoint him. The appointment virtually rested with the Appointments Commission. The selection board, which advised the Commission as to its choice, was guided by a statement of the qualifications and experience of the candidates, and by the impression formed at a personal interview. Now that the final choice rests with the members of the local authority, without any guidance as to the relative merits of the three selected candidates, it is clear that less weight will be laid on qualifications and experience, and more on personal and political and family influence. The quality of the candidates for public appointments had greatly improved in the past few years. It is to be feared that there will be a change in the opposite direction as a result of the change of procedure made by the Appointments Commission.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

II.—COUNTY HEALTH OFFICER

The writer is medical officer to two small county councils, one of which contains a borough with a population of about 43,000. In the other there are two small towns with populations varying from 2000–3000. The total population of the two counties is about 67,000. The work of county medical officer includes that of school medical officer, tuberculosis officer, venereal diseases officer, mental deficiency officer, and inspector of midwives; work does not include environmental hygiene, which is performed by the officers of the urban and rural districts.

I usually wake, he writes, at 6.30 A.M. and read for an hour, but not the platitudes of Dr. Worldly Wiseman, nor the effusions of Dr. Social Uplift; as a good Victorian I prefer that helpful tract, "The Importance of being Earnest" and the essays of the incomparable Max. At 7.20 the postman comes, and I read all my letters and decide on my replies. At 9 I go to my office for a quarter of an hour and dictate letters to my secretary. My postage account amounts to £20 per quarter. At 9.30 I attend three women with gonorrhœa, and a like number of men, at the dispensary in my garden. I give two artificial pneumothorax refills. One or two cases are treated for syphilis. I return to my office, sign my letters, and make arrangements for my next week's work.

A DAY IN THE CAR

I get into my car and take my nurse with me. We drive to the nearest town, where I treat three more cases of syphilis in their own homes by intravenous and intramuscular injection. We go to another house in a village to do an artificial pneumothorax operation, and examine another consumptive in the same house. We then pass on to another village where a boy has recently come home from a special school for defective children. Is he to go back in view of the economy campaign? I find he cannot repeat "round and round the rugged rock the ragged rascal ran." My committee is advised that he should be allowed to return to the special school. We go to another village to examine a boy whose mother has asked that he may be excused from attending a central school. I find the boy is suffering from rheumatism, and that his heart is right out in the mid-axillary line. He is pale, anæmic, and pyrexial. He is advised to stay away from school for a year. We pass on to another village where an artificial pneumothorax refill is undertaken in the patient's home; and to yet another village where we treat a lady with gonorrhœa on her kitchen table, and give her an injection for syphilis on her sofa.

By this time it is 1 P.M. My nurse and I lunch in the car. This takes 20 minutes; then off we go ten miles to inject a boy with congenital syphilis with neokharsivan and bismuth in his own residence. After that we go another ten miles to attend a lady and gentleman, both of whom are suffering from syphilis. The lady was discovered at a school medical inspection with a large gumma in her neck. Her husband showed no signs of disease, but shortly developed epileptic fits and his Wassermann reaction was found to be strongly positive. The children showed no signs of congenital syphilis, and the blood test in all four of them was negative. We pass to the county town where two cases of pulmonary tuberculosis are visited and two cases of syphilis treated in their homes. We go on to another village where we see a case of congenital syphilis which has been under constant treatment for five years. When ingestion of the hormone, unless it is given in very high dosage. These latter cases are, however, often free from sugar for a long time. Degenerative changes in the pancreas are always present in diabetes, whilst changes in other organs (adrenals and hypophysis) are only of a secondary nature. Falta believes that the insulin-resistant cases are due to an increased counteraction of the adrenals; perhaps this hyperfunction may itself in some instances produce diabetes. At present two types of disturbances of sugar-metabolism are distinguished. In one group, the "insular organ" is over-active, and we find super-insulinism; in the other the adrenals act too little. In both instances we find the hypoglycæmic complex of symptoms. Again, there may be atrophy of the insular organ, with hypertrophy of the adrenals. Here we have hyperglycæmia and increase of sugar in the urine. The majority of insulin-resistant patients can be made free from sugar with very high doses of insulin; then the insulin may be almost entirely cut down, and the patients show a permanent tolerance for food.

The subsequent discussion was chiefly devoted to diet in diabetes. The difference of opinion centered around the question: Should diabetics receive food rich in fat or poor in fat? Prof. O. Porges (Vienna) and Dr. Adlersberg, his assistant, advise a diet poor in fat and rich in proteins and carbohydrates. Prof. Noorden, whose experience is probably the most extensive in German countries, now also holds this opinion. Falta prefers more fat in the diet. Russian physicians reported good results obtained in the special diabetic kitchens opened for workmen. Prof. G. Katsch (Greifswald), medical superintendent of a diabetic sanatorium on the Isle of Rügen, described his observations on more than 400 patients, who are under constant supervision. They are given the Porges-Adlersberg diet, with plenty of bread (250 g. per day), and plenty of work. The work has a tendency to lower the sugar-content of the blood, as has often been proved. Similar favourable observations were made in Berlin by Rosenberg in the Western Hospital for Diabetics. This was the most important subject discussed at the Congress, for it may be said to be the crux of the therapeutic problems of the present day. So many papers were read on diabetes in general that they cannot all be mentioned here; but the problem of surgical interference, of heredity, of chemical purity of insulin, dermatological symptoms, and sociological points were all brought forward by competent speakers.

THE LARGE INTESTINE

The third day of the Congress was devoted to the problems of the rectum and sigmoid colon. Prof. R. Maresch (Vienna) discussed the formation of polyps, and maintained that their degeneration into cancers takes place only in 37 per cent. of the cases, while some German authors put it as high as 50 per cent. The X ray diagnosis of diseases of these parts was presented by Dr. Fischer (Berlin), who spoke especially on diverticula. He pointed out that modern methods of examination make it possible to decide by X rays whether the passage in the intestines is impeded by spastic or organic causes, intrinsic or extrinsic factors, of inflammatory or neoplastic nature. Prof. Mayer (Berlin) pointed out that neoplasms of the rectum have been observed in children of 11–13 years of age, and laid stress on the fact that microscopical examination alone is not sufficient to distinguish definitely between a malignant and a benign tumour; each case must be judged on its merits. Gynæcological problems in connexion with pathological conditions of the lower intestinal canal were discussed by Prof. G. A. Wagner (Berlin), who made special reference to the injuries caused by radium application in the vagina or rectum, and advised the use of high-voltage X rays. Dr. Boas (Berlin) read a paper on rectal inflammations and eczema, and advised a diet with no condiments or salt. Prof. Finsterer (Vienna) demonstrated cured cases of rectal new growth operated on under splanchnic anæsthesia some 15–20 years ago. Electrosurgery (coagulation) was strongly advocated by Dr. F. Mandl (Vienna), and "subaqual intestinal lavage" was discussed and advised by Prof. R. von den Velden (Berlin). A very interesting paper on intestinal parasites was read by Dr. Fiebiger, of the Veterinary College, Vienna, and Zweeg and Schindler showed their instruments for deep examination of the rectum and stomach (proctosigmoscope and flexible gastroscope).

PARIS

(FROM OUR OWN CORRESPONDENT)

CENTENARY OF DR. A. GUÉNIOT

On Nov. 8th the weekly meeting of the Academy of Medicine was exclusively devoted to celebrating the centenary of Dr. Alexandre Guéniot. He was present himself, looking like a youthful septuagenarian in his academic robes of violet, green, and gold—a picturesque and distinguished figure with features not unlike those of Sir Clifford Allbutt. The Minister of National Education presided, and the hall and gallery of the Academy were crowded with the élite of the medical profession, and representatives of the Government of France and the municipality of Paris, together with the leaders of the sciences allied to medicine. In recognition of the part he had played in ushering numberless Parisians into the world, he was presented with a medal by the chairman of the Municipal Council. Reference was also made to his presidency of the Academy of Medicine, to his faithful attendances at its meetings even up to the present time, and to a book he had published not so long ago on "How to Live to 100"—a work which doubtless will become a best seller in Paris this month. The Minister of National Education reminded him that since the time of Hippocrates, supposed to have died at the age of 109, there have been many doctors who have led useful and active lives after the age of 100. Dr. Guéniot replied to his many well-wishers in that spirit of gentle banter which was the keynote of the meeting from beginning to end.

PAST, PRESENT, AND FUTURE OF SEROTHERAPY

In a communication to the Academy of Medicine on Oct. 5th Charles Richet, the father of modern serotherapy, indulged in certain personal and impersonal reminiscences, defined its present position, and drew a rough sketch of its future. It was on Nov. 5th, 1888, that Richet and Héricourt made their now famous communication to the Academy of Sciences, and on Dec. 6th, 1890, they gave the first serotherapeutic injection in history at the Hôtel-Dieu. While they pursued their studies in connexion with tuberculosis, and achieved nothing decisive for the time being in this field, Behring and Kitasato made those contributions to the serotherapy of tetanus and diphtheria which proved so brilliantly successful. By 1899 there were no fewer than 45 different therapeutic sera prepared, but several of them never got

CORRESPONDENCE

AUXILIARY TREATMENT OF TOXIC DIPHTHERIA

To the Editor of THE LANCET

SIR,—The work of Schwentker and Noel, quoted by Dr. Woodcock, upon the treatment of the circulatory failure of diphtheria was founded not upon hypothesis but upon very careful pathological and biochemical investigations by themselves and others. The work, which gained the William H. Howell award of the Johns Hopkins University, appeared to me of such great significance that I agreed with my then colleagues in the Birmingham City Hospital—E. C. Benn, E. Hughes, S. Alstead—that it should be repeated and extended. This was done by them under my close observation throughout, and the results, which were published in THE LANCET of Feb. 6th (p. 281), were definitely favourable. At the same time, it must be pointed out that this work required the collaboration of three medical officers working as a team, although it is true that the energies of one of them, Dr. Stanley Alstead, were in part employed in obtaining repeated electrocardiograms from the cases under treatment, and so providing most valuable evidence as to progress. In your last issue (p. 1077) these workers insist, and I agree with them, that when insulin is employed in cases of toxic diphtheria it is of importance that its use should be controlled by blood-sugar estimations. These estimations, which were made throughout by Dr. Hughes, necessitated his being available at all sorts of unlikely times and, in the aggregate, represented many hours of work. In a word, the technique would be difficult or impossible to carry out in small fever hospitals or in general practice.

My observations both in Birmingham and in the diphtheria wards of this hospital have convinced me that the administration of glucose in addition to antitoxin will save the lives of children suffering from hypertoxic diphtheria which would not be saved by antitoxin alone. Hence, assuming these observations to be correct, which from the results of others they appear to be, it becomes important to evolve the simplest possible technique, if this auxiliary treatment is to become of general application. Although I have no experience in the use of the further accessories of iodine, alkalis, and thyroid employed by Dr. Peters, and am not impressed by the hypothesis upon which their use is founded, I agree with him as to the importance of *intravenous* glucose therapy wherever possible. But where intravenous injection is for any reason impossible, then half a loaf is better than no bread, and the oral or subcutaneous route should be resorted to. That part at least of the dose of antitoxin should also be injected intravenously whenever possible in these grave cases and part intramuscularly should go without saying. As to insulin, I think there is little doubt that in some of the cases of the Birmingham series its injection, guided by blood-sugar estimations, turned the scale. On the other hand, within recent months, some striking recoveries have occurred in the wards of this hospital following intravenous antitoxin and glucose to which insulin did not contribute. In my opinion every case of toxic diphtheria should, in addition to an appropriate dose of antitoxin (in part intravenous), also receive glucose at first intravenously and then for next ten days by mouth. Insulin, unless adequate facilities for blood-sugar estimations exist, it is wiser, I think, to omit.—I am, Sir, yours faithfully,

E. H. R. HARRIES,

Nov. 12th. Medical Supt., North-Eastern Hospital, N. 15.

THE ECONOMICS OF TUBERCULOSIS

To the Editor of THE LANCET

SIR,—In your issue of Oct. 29th (p. 956) is a summary of Dr. Jane Walker's address analysing the success of the present-day attempt to control tuberculosis. In an article which appeared in your columns nearly 20 years ago,[1] when I was a tuberculosis officer to the Essex County Council, I analysed the first hundred cases recommended for sanatorium benefit in East Essex and noted how advanced these were before they came under the notice of the tuberculosis officer. The same thing had already struck me when medical superintendent at Benenden—the complaint was in fact familiar at every sanatorium in Great Britain; but my ten years in Essex were enough to show me that the general practitioner was getting more interested in chest work and was thus justifying the existence of tuberculosis officers. During the years which have since elapsed I have not changed my view that sanatorium benefit is a failure, and the reason is clear enough. Let me define a public health "omnibus expert" as a doctor who holds the D.P.H., and who poses as a specialist in tuberculosis and mental deficiency, while he is excellent at his proper job of general public health work and school inspection. I will trace how these omnibus experts came into being. In August, 1912, when Dr. F. G. Bushnell and Dr. N. O. Pitt and myself were appointed tuberculosis officers to Essex, we were, I believe, the first appointments in tuberculosis under the sanatorium benefits section of the N.H.I. Acts. The report of the Astor Commission, under which these appointments were made, covered the situation very carefully. We had to prove that we had held general hospital posts for so long and had been properly trained in tuberculosis work, so that the public as well as the practitioner might have reasonable confidence in us. At that date of course X rays, artificial pneumothorax, phrenic avulsion, and thoracoplasty were practically unknown in this country. When the Local Government Board allowed a local authority to appoint as tuberculosis officer one who did not fulfil the Astor Commission's minimal demands, from that moment did the tuberculosis campaign fail in the areas which had omnibus experts. I shall be told that in these areas to-day we have a chief clinical tuberculosis officer, who is an expert, or a hospital consultant. I agree that they are excellent, but as long as human nature is what it is they will be starved of cases. The result is that sanatoria are full of doubtfully tuberculous cases. The believers in the omnibus experts say that it is waste of money on the same day to let the county M.O.H., the local M.O.H., and the tuberculosis officer visit the same place; but if the tuberculosis officer should diagnose a case as consumption that has not got it, look at the expense to the public and the hardship to the individual. Suppose an omnibus expert is appointed in one of these areas, he is sent to a town of (say) 30,000 inhabitants, he is given a dispensary and waiting-room, but no X rays. On his first visit he may meet in consultation a leading practitioner who has an X ray plant and who may have been a house officer at Brompton 20 years ago. Now two things may happen; he may say he cannot read a film or he may pretend he can. From that moment he is of no further use in the county. I strongly advise return to the able and sensible Astor Commission report; large areas each with a proper first seen this boy was covered with mucous tubercles, but is now a healthy looking and intelligent child; it has taken five years of constant treatment to get his Wassermann reaction negative. One curses the official policy of obscurantism, and passes on to another village where we visit a healthy young woman who was formerly wasted to a shadow with a gummatous ulceration at the back of her pharynx. She has now two healthy babies. Syphilis is preventable and steps should be taken to instruct persons in the means of prevention. This would prevent an unfortunate young woman wasting away till she looked like the victim of an Indian famine, or 14 of my syphilitic patients being nearly blind for months. But the Social Hygiene Council has set its face against instruction of this nature. We now return to headquarters, where we treat more cases of gonorrhœa and syphilis. The day usually ends about 6 P.M.

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[1] THE LANCET, 1913, i., 913.

MORE STATIONARY DAYS

Another day is spent on medical inspections and public health work. An excellent attendance of parents at the medical inspections—over 70 per cent. of them come—is secured by writing to each stating the exact time of the child's examination. The parents are asked if the child has suffered from any of the infectious diseases, pneumonia, growing pains, stiff neck, earache, or ear discharge. I also inquire as to the age of beginning to walk and talk, and the method of upbringing adopted in infancy—i.e., breast or bottle, and the use of a dummy teat. During this period the nurse weighs and measures the child, examines the head for cleanliness, tests the child's vision, and hearing by the forced whisper test. The state of the throat—tonsils, adenoids, and goitre—and teeth is then recorded by the medical officer. The heart and lungs are examined by palpation, percussion, and auscultation. The trousers are then lowered in boys, the presence or absence of phimosis and hernia noted, and the position of the testicles ascertained. The stockings are removed and the existence or absence of bunions, flat-feet, and spinal curvature is observed. If the vision is below 6/9, the optic disc is examined, and if the hearing is below 20/20, or if tonsils and adenoids exist, the otoscope is used. The parent, if present, is informed of any defects found and, in addition, after the examination a letter is sent informing the parents of any defects which require treatment. The school nurse visits the home and arranges for the child to attend the ophthalmic, orthopædic, or aural clinics established by the county education committee. In addition, a school dentist visits each school and inspects and treats the children in a horse-drawn caravan. There are no care committees.

As medical inspection can only be undertaken in school hours, and as religious instruction must not be interrupted, only four hours' medical inspection can be managed in any one day. This leaves time to call on any of the nurse-midwives, and to inspect in their homes their bags and registers. Many of the schools have formed milk clubs, and it is important for me to look at the cows and sheds belonging to the farmer who sells the milk. Only the cleanliness of the cows is considered by the medical officer: all the cows in my counties are subjected to a bi-annual examination by veterinary inspectors. The sheds and dairy are examined for cleanliness. I also inspect the cowsheds in company with the veterinary surgeons if samples of milk coming from my counties are discovered by the London or other county councils to contain tubercle bacilli. Between 12 and 2 o'clock I also undertake the inspection of cottages which have been rebuilt under the Housing (Rural Workers) Act —a most useful measure—and the supervision of mental defectives under guardianship or statutory supervision.

In my other county the work is more like that of a medical officer to a medium-sized borough. The mornings are usually devoted to medical inspections, and the afternoons and evenings from 2.30 to 8 o'clock to the treatment of cases of venereal disease and tuberculosis.

WHY DOES THE WORK ATTRACT ME?

There are no half-days. The salary is £1400 a year, with an allowance of £250 for motor-car and also clerical expenditure. The work is attractive for various reasons. In the first place I have no social duties. My wife does not have to call on newcomers; we do not have to entertain. I do not have to go to church, play golf or bridge, or become a Freemason. On the whole I prefer the country to the town. I live in a beautiful village with under 1000 inhabitants. It is mainly agricultural, but recently large cement works have been started, which in no ways disturb the amenities. The house in which I live—the only one available in the county in 1911—and my office accommodation were formerly the county brewery. When I first took the house it was the property of a maltster. The house was in good repair, but was surrounded by brewery buildings in more or less advanced stages of dilapidation. A huge tower overlooked the house, in which all the fowls of the air seemed to congregate. After the war I bought the house, the dilapidated brewery, and an acre and a half of ground for £950. I pulled down the brewery (selling the stone for £150), but retained the offices for the use of my county councils. I laid out lawns and flower-beds where beer had once been brewed. The site of the malting was converted into a sunk garden. Its windows were converted into small alcoves which are filled with flowers. A sun-dial was bought in the Euston-road. The whole, I am told, has a wonderful look of the old-world. A small laboratory, and a wooden building in which patients suffering from tuberculosis and venereal diseases are seen, have been erected on the ground adjoining the office.

I take only two weeks' holiday a year. Larger holidays would bore me. The first week I spend at the British Medical Association, and the rest at Stratford-on-Avon and Malvern. I live in the only county where there is no theatre, so during my last holiday I went to 13 plays in 14 days, chiefly those of the Bard, but also those of Shaw and other authors, produced by Sir Barry Jackson. As I belong to the Royal Society of Medicine and the London Library I never have a dull moment. Sundays are especially delicious. I stay in bed till 11 A.M., reading for about two hours. I then attend to a few patients, chiefly gonorrhœics, do an hour or two's work in the laboratory, prepare abstracts for a medical journal, and then go out for a walk with my dogs for some six miles. Apart from medical work I am kindly allowed to inflict on the local historical societies my hearty admiration of various abnormal persons, such as Catherine II. of Russia, Charles II. of England, and Jeffrey Hudson of Oakham.

Should I like to change my job? On the whole no. In a larger county I should be cut off from clinical work, and in private practice one sees too little of any one disease. You ask, "Are you doing any good?" To this I regretfully answer, "I doubt it," for do I not prolong the life of the syphilitic, the consumptive, and the mental defective? But perhaps this account of an ill-spent life will be of use in preventing others from entering an overcrowded profession.

CONVALESCENT HOME FOR MINERS' FAMILIES.—It is proposed to adapt Berry Hill Hall, Mansfield, a large house surrounded by 80 acres, which has for some years been used as a miners' convalescent home, as a centre for the convalescent treatment of Nottinghamshire miners' wives and children. It is proposed by the local committee of the Miners' Welfare Fund that all the adult colliery workers in the county shall contribute a halfpenny a week towards maintenance and the travelling expenses of patients. There are stated to be more than 200 miners' children in the county suffering from physical disability.

iving a hypodermic of hyoscine hydrobromide r. 1/100. One patient of mine, when she saw her hild, said "is that mine? I thought someone else was aving a baby and I was taking an interest in it." I irst learned the use of hyoscine at St. Andrew's Hospital in 1882. While suggesting its use in midvifery, I can tell you much more of it in cases of nental derangement, other than maniacal cases. I ound gr. 1/100 taken by mouth—it is tasteless in vater—the most useful sedative I knew. It much stonished me from the evidence at the Crippen trial iow very little the medical profession knew of it. Dr. D. J. Leech, of Manchester, asked me to write on t nearly 40 years ago, and I then gave him all my xtensive notes.—I am, Sir, yours faithfully,

New Milton, Hants, Nov. 11th. WILLIAM STANWELL.

DECOMPRESSION IN ENCEPHALITIS LETHARGICA

To the Editor of THE LANCET

SIR,—In Kenya, although we have had a fair number of cases of encephalitis lethargica, I have never known of any to survive. I was therefore justified, when I saw no hope of recovery, in trying anything reasonable on two cases recently under my care. Both were Europeans: one aged 23 and the other 5 years.

The diagnosis was clinically, and according to laboratory findings, as definite as it could be. Both were treated in the ordinary way, by repeated lumbar punctures, until it was quite evident that without continuous drainage of the brain they must die. Subtemporal decompression immediately above the zygoma was done, and the dura entirely removed so that drainage would take place into the depth of the temporal muscle and the fluid be there absorbed. In both, on opening the dura, there was a big flow of water.

After this comparatively simple operation to obtain continuous drainage the worst symptoms immediately disappeared. It took a fortnight in one case and a month in the other before cerebral irritation was quite gone. They are now both well, and without any unpleasant results. One I operated on three years ago, the other one year ago.

I am, Sir, yours faithfully,

Nairobi, Oct. 10th, 1932. R. W. BURKITT.

FUSO-SPIROCHÆTAL DISEASES OF THE LUNGS

To the Editor of THE LANCET

SIR,—If Dr. A. S. Hall will look up the first reference[1] I gave in my paper he will find his question answered very fully by Dr. David T. Smith, of the New York State Hospital for Incipient Pulmonary Tuberculosis, together with a full bibliography, up to that date, of the conditions. Dr. Smith writes:

> "The disease may manifest itself as: (1) pulmonary gangrene; (2) post-operative pulmonary abscess; (3) non-operative pulmonary abscess; (4) abscess secondary to (*a*) aspiration of a foreign body, (*b*) pulmonary neoplasm, or even (*c*) pulmonary tuberculosis; (5) unresolved pneumonia; (6) acute bronchitis; (7) bloody bronchitis; (8) putrid bronchitis; or (9) chronic bronchiectasis. In all these different clinical forms of the disease exactly the same bacteriological flora have been present."

The two acute cases reported by me were obviously cases of post-operative "putrid" lung abscess, the particular type of lung abscess for which the *Bacillus fusiformis* and *Spirochæta vincenti* are believed to be responsible. The chronic cases I believe to correspond to the "bloody" or "putrid bronchitis" of Smith, the "bronchial spirochætosis" of Castellani, Chalmers, O'Farrell, and many others. Mason[2] described "pleural spirochætosis," and Lamb and Paton a case of vegetative endocarditis said to be caused by the same organisms. In one of my cases a chronic syphilitic pulmonary fibrosis may possibly have complicated the condition. Whether a streptococcus or a pneumococcus acts as a sort of "pilot" for the fusiform bacillus and spirochæte in these conditions seems to me a matter of minor importance.

Obviously, many other organisms may be responsible for similar conditions. In another case of mine, met with in a young farmer in 1931, dyspnœa, loss of weight, and sweating were associated with a purulent bronchitis. The sputum contained mycelial threads in large amount. The mycelium was identified by Dr. Gloyne as that of *Penicillium glaucum*, a mould found on decaying fruit, hay, and cattle foodstuffs. After a prolonged course of treatment with arsenical preparations by the mouth, the mycelium disappeared from the sputum after which the condition cleared up completely.

My suggestion is that intravenous arsenical treatment is desirable in all the pulmonary forms of Vincent's disease, in order to dislodge the deeply buried anaerobic spirochætes from their entrenchments. Arsenicals are now being used intravenously even in Vincent's stomatitis.[3]

I am, Sir, yours faithfully,

Buxton, Nov. 7th, 1932. P. HEFFERNAN.

THE INCREASE IN ARSENIC-RESISTANT SYPHILIS

To the Editor of THE LANCET

SIR,—I am gratified to find the thesis of Dr. Drake and Dr. Thomson, that a more resistant form of spironema is making its appearance, supported by Dr. Semon. My reason for bringing this matter before the profession is to have a thorough investigation of the late results of modern syphilotherapy. What I earnestly desire is to get a comparison between these results and what one may call the natural history of late syphilis as demonstrated by Bruusgaard's masterly analysis of César Boeck's patients who had no specific treatment whatever.[4] The venereologist does not come into the inquiry. It demands a cardiologist, a radiologist, a neurologist, and a serologist, working in collaboration with asylum and hospital authorities. After 20 years of arsenical therapy the time appears to me ripe for such an inquiry. Investigation of the immediate results of many thousands of cases, as I understand is being prosecuted by the League of Nations, would have no value in comparison with (say) 1000 cases worked out on the lines of Bruusgaard.

May I assure Colonel Burke that I did not "assume" that syphilis was decreasing in severity before "606" was introduced. As a pupil of Hutchinson, Waren Tay, and others who knew syphilis, I learned that what was described as its "trivial" cutaneous manifestations were the outward and visible signs of a general disease, and in my own clinic that was always my teaching. As students we learned also that there was an ætiological relationship between aneurysm and aortic disease and lues, and although we knew naught of the spironema and had no serologist to make our diagnoses, we knew there was a connexion between it and G.P.I., tabes, and ocular paralyses. As we still tuberculosis specialist, if possible M.D., M.R.C.P. Until then we shall drift along in this hopeless condition, deceiving the public and wasting thousands a year. I am, Sir, yours faithfully,

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[1] Tubercle, 1928, ix., 420.

[2] Bull. Johns Hopkins Hosp., 1920, xxxi., 435.

[3] Caskey, C. R.: Urol. and Cut. Rev., June, 1932, p. 370.

[4] Norsk Mag. f. Laegevidensk, 1928, lxxxix., 1222; Arch. f. Dermat. u. Syph., 1929, clvii., 309; see THE LANCET, 1929, i., 135.

J. D. MACFIE.

Winsley Sanatorium, near Bath, Oct. 28th, 1932.

UNEMPLOYMENT AND RESEARCH

To the Editor of THE LANCET

SIR,—Two and a half days have not been enough to pool half the experience and suggestions on unemployment from the back benches of the House of Commons. But there has been at least one conspicuous omission from the debate—namely, the part science must play in the problem. Mr. Lansbury quoted a recent writer as saying "Science is progressively diminishing the demand for man-power." This is a glaring fallacy. So said the mob that broke up the first spinning-jenny. What could industry do without steam, gas, electricity, fine chemicals, the internal combustion engine—all the products of science? Labour-saving machinery is but a by-product of science. It is to science we must look for fresh developments of individual and corporate life, creating fresh desires and interests in all parts of the world, and increasing the demand for man-power.

The basis of scientific discovery is research, real and not spurious, well guided but free, alike in the basic arts and sciences and in their application to life and industry. In this country we starve research; we appreciate the results, but not the necessary precedents. Honour is given to those who explore mountain-heights, deserts, and polar regions; little to those who explore Nature and substance at our very doors. The encouragement of research—both in pure and applied science—must be one of the most vital, as it is one of the few hopeful, factors in the future expansion of industry and solution of unemployment.

I am, Sir, yours faithfully,

FRANCIS FREMANTLE.

House of Commons, Nov. 9th, 1932.

THE ROYAL MEDICAL BENEVOLENT FUND

To the Editor of THE LANCET

SIR,—I should like to endorse Sir Thomas Barlow's appeal to his fellow practitioners for generosity to the Royal Medical Benevolent Fund. The good work which this Fund has been doing during the last 96 years is well known, but it may not be so well understood that much more urgent assistance could be given if funds were available. Will each member of our profession consider this to be a debt of honour, and one not lightly to be put on one side. I suggest again, as I suggested in your columns three years ago, that when we have benefited by the advice of consulting physicians and surgeons in reference to the health of ourselves, or wives or children, we might well be expected to show our gratitude by sending some help, even if small, to this Fund. There are always piteous cases of doctors who have fallen out of the ranks on account of permanent ill-health, or their widows and children for whom the father has not had a chance to make an adequate provision.

Donations may be sent to the hon. treasurer, R.M.B.F., 11, Chandos-street, London, W.1. I need hardly say that all applications for help are most carefully examined before assistance is given.

I am, Sir, yours faithfully,

Harrogate, Nov. 14th, 1932. JAMES G. MACASKIE.

CHLOROFORM CAPSULES

To the Editor of THE LANCET

SIR,—The administration of chloroform capsules in maternity practice by midwives is perhaps not quite so simple a problem as some may come to believe. These capsules are now being tried by experienced administrators in our most up-to-date clinics in the best of circumstances, and I have no doubt that they will give rise to considerable approval. I shall take as a text for my argument a recent extract from the daily press.

"Mr. ——, —— deputy-coroner, held an inquest yesterday on ——, aged 30, —— wife of a dock labourer, and the mother of nine children, who died in the Maternity Hospital on Friday from asphyxia, while under an anæsthetic for an obstetric examination.

"Miss ——, the matron, said she administered the anæsthetic, which she made up from chloroform and ether, in the presence of Dr. ——, the honorary surgeon. She was a certified midwife, but not a qualified anæsthetist, although she had administered anæsthetics many times. During the examination the patient's face changed colour. Oxygen and other restoratives were applied, but the patient did not revive. A post-mortem was made by Dr. ——, who found that death was due to asphyxia, following the administration of an anæsthetic, accelerated by hæmorrhage and the necessary obstetric procedure which were a predisposing factor by reducing the woman's strength.

"The deputy-coroner, who returned a verdict in accordance with the medical evidence, said it was a matter for serious concern to discover that it was the practice in this hospital for an anæsthetic to be administered by a person who was not fully qualified. He did not attach any blame either to the matron or to Dr. —— for following what was evidently a practice established by their predecessors. In all probability even if a qualified anæsthetist had administered the anæsthetic in this case the same result would have occurred. He thought the anæsthetic was properly and skilfully administered, and that every effort was made to restore the patient. At the same time, in view of modern medicine and the use of anæsthesia as much as possible in confinement cases, he thought the hospital should discontinue the present practice, and arrange for the attendance of a qualified anæsthetist."

This patient, then, died from asphyxia and not from primary cardiac failure. I can imagine the scene. The reflex disturbance in the larynx and respiratory mechanism, set up by manipulations or the stretching of the pelvic floor, the rapidly developing muscular rigidity, the clenched jaws and contracted throat muscles, the swelling and retracted tongue, the deepening cyanosis passing into lividity as the heart fails to cope with the obstructed pulmonary circulation, and finally the few terminal gasps as the respiratory centre gives out. Here is a condition which if once established, especially in a bad light and the poor circumstances which a feather bed offers, might well tax the skill, resource, and presence of mind of an experienced administrator.

I am not antagonistic to the administration of chloroform as an analgesic in obstetrics, for if not the best it is probably the most practical agent for general use at the present time. But will Mr. Rivett and his co-workers be able to arrange with certainty that the use of these capsules will never lead a stout plethoric woman into the unfortunate circumstances which I have described, and should such a train of events develop in the dim light of a cottage bedroom, at which end of the case will the perplexed midwife be the more successful?

I am, Sir, yours faithfully,

London, W., Nov. 12th, 1932. W. HOWARD JONES.

To the Editor of THE LANCET

SIR,—I have been interested lately in discussions on the need for new methods of easing the pains of childbirth. For many years I was in the habit, in cases in which I had previously used chloroform, of nsurance medical practice to final-year medical tudents." The preamble to this and the chairman's tatement made it quite clear (though the resolution tself did not say so) that the payment for these ectures could come from the interest on the capital um of the National Insurance Defence Trust. An mendment was carried limiting the draft from this ource to £150 in any one year, but this amendment n turn was lost as a substantive motion. It was finally esolved that the expense of educating medical tudents in insurance practice should not devolve pon the service itself, but that the attention of he medical schools should be drawn to their esponsibility in providing such instruction.

A PLACE IN THE CURRICULUM

The medical curriculum, we are told, is now under eview by a committee of experts with the idea f eliminating certain matters which are thought o occupy too much of the student's time. It is suggested, for instance, that some of the minute anatomy earnt solely for examination purposes and forgotten within six months, might be eliminated. It is to be hoped that this committee, although in all probability the great majority of its members have not worked under the Acts at all, will consider the necessity of requiring the medical schools to provide some teaching on the regulations of a service into which the majority of their pupils will eventually go. It may perhaps be said without offence that there is room for improvement in the training of the younger men on duty in hospitals in the issue of certificates to any who apply for them. It is unhappily a commonplace remark amongst leaders of approved societies that certificates from hospitals are not worth the paper they are written on. At one time it was a common practice for a batch of blank certificate forms to be signed by the house surgeon or house physician and left in charge of the sister of the ward to fill in details and date. No doubt this practice generally worked without harm, but it had nothing to recommend it from an administrative point of view, and it readily lent itself to fraud. Such certification methods would not be tolerated in the N.H.I. medical service, with the result that the strictness of the rules comes rather as a shock to the newly qualified man entering practice, and leads him to wonder where he has gone wrong when a complaint is made about his certification procedure.

HOSPITAL AND PRACTITIONER

As far as the insurance service is concerned, hospitals are primarily intended either for the obtaining of a second opinion, or for the carrying out of some treatment, operative or otherwise, which the insurance practitioner cannot do himself at home; he, in his turn, is not playing the game if, because a case happens to be somewhat onerous on him in its treatment, he simply sends it off to hospital to save himself the trouble of attending it. It is certainly his duty, when sending up a case to hospital for another opinion, to write to the member of the staff giving some particulars of what is or has been done up to the time of sending it up, and not merely to unload it on the hospital with (or even without) his visiting card. In Scotland and some enlightened areas in this country, a special form is in use for sending up cases to hospital. If this becomes general it should prove a convenience both to practitioner and hospital staff, and help to smooth the pathway of the patient up to the hospital, between its various departments, and back to the practitioner.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

The Means Test

ON Wednesday, Nov. 9th, the House of Commons went into committee (Sir D. HERBERT in the chair) on the following resolution in connexion with the Transitional Payments (Determination of Need) Bill:—

> That it is expedient—
>
> (a) To make provision that, in determining under the Unemployment Insurance (National Economy) (No. 2) Order, 1931, questions as to whether the circumstances of applicants for transitional payments are such that, whilst unemployed, they are in need of such payments, the following rules shall be complied with—
>
> (i.) Wounds or disability pensions (as enumerated in Section 16 of the Finance Act, 1919) which are taken into account, shall be treated as if they were reduced by one-half;
>
> (ii.) weekly payments by way of compensation under the enactments relating to workmen's compensation in force in the United Kingdom which are taken into account, shall be treated as if they were reduced by one-half;
>
> (iii.) money and investments treated as capital assets and taken into account shall, in so far as the value of all such money and investments considered in the aggregate does not exceed £25, be disregarded, and, in so far as that value exceeds that amount but does not exceed £300, be treated as equivalent to a weekly income of 1s. for every complete £25;
>
> (iv.) in taking into account the value to any person of any interest in the dwelling-house in which he resides, any sum which might be obtained by him by selling or by borrowing money upon the security of that interest shall be disregarded; and to authorise the expenditure, out of moneys provided by Parliament, of such expenses as may be incurred by reason of the provisions aforesaid; and
>
> (b) to permit the application of the same rules in the granting of outdoor relief under the enactments relating to the poor-law.

Sir H. BETTERTON (Minister of Labour), in moving the resolution, said that its purpose was to enable him to introduce at once a Bill to provide that certain rules should be applied in determining the need of applicants for transitional payment. The resolution also provided that the same rules should be applied in granting outdoor relief. Only those who had exhausted their insurance qualifications, and whose relief was provided wholly by the Exchequer, were affected by the resolution. Under the Order made a year ago it must be assumed that they had exhausted their right after 26 weeks, and he held that that could not be regarded as an ungenerous allowance of time. A man and wife and three children, in 26 weeks, received £38 in benefit, and taking the contributions as 10*d.* per week it would take 18 years before the unemployed person had paid in enough to make up the £38. The claim of the Opposition was that a man who had exhausted his claim on the fund, and then sought relief from the State, should have that relief whatever his means might be, and without any inquiry being made. Such a man was to be privileged as against the insured person because he had exhausted his right, and privileged against the man who applied for poor-law relief because no inquiry was to be made into his means. The Government did not hold that view. The Labour Government had passed the Anomalies Act in order to deal with certain abuses in the system. The present Government were now dealing with abuses which were even more flagrant than those dealt with by the Anomalies Act. There had been discrepancies in administration, and the new Bill founded on this resolution would be directed to a more uniform system of dealing with applicants. The Bill would be limited to three types of resources—disability pensions, workmen's compensation, and savings.

that asylums should retain patients who might quite well be suitably cared for by guardians. District asylums, says the Board, hold land not as a source of profit but in order to provide therapeutic occupation for the patients, and the places of boarded-out patients should be filled by others who have reached a stage at which they would benefit by the work.

All the patients under guardianship were visited last year. Dr. Ferguson Watson reports that their care and supervision attain a remarkably high standard. Most of the guardians have housed patients for many years and their parents and grandparents also undertook this work. Many guardians are skilful at training and improving their patients, some of the most capable and devoted being spinsters, whose motive in taking them is a desire for companionship and a genuine sympathy for those unable to guide their own lives.

The number of patients suffering from general paralysis of the insane at the beginning of this year was 385. Of the 403 patients discharged after treatment for general paralysis during the previous decade 116 had been treated by induced malaria and 287 by other treatment; it is not clear how many of these were also treated by malaria. Ninety-nine, including 40 of the malaria-treated, were discharged as recovered; 110, including 48 malaria-treated, were discharged as relieved, and 194, of whom 28 had been treated with malaria, were discharged as not improved. Sixty-nine of these patients, including 29 malaria-treated patients, have since been readmitted.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 5TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 21 (last week 34); scarlet fever, 2283; diphtheria, 1060; enteric fever, 74; acute pneumonia (primary or influenzal), 803; puerperal fever, 28; puerperal pyrexia, 107; cerebro-spinal fever, 24; acute poliomyelitis, 40; acute polio-encephalitis, 5; encephalitis lethargica, 12; continued fever, 2 (Islington, 1; Eastleigh, 1); dysentery, 6; ophthalmia neonatorum, 76. No case of cholera, plague, or typhus fever was notified during the week.

Of the cases of small-pox, 18 (i.e., all except 3) were reported from the County of London, distributed thus among the metropolitan boroughs: Southwark and Stepney each 1, Islington 2, Hackney 4, Poplar 10.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 8th–9th was as follows:—Small-pox, 70 under treatment, 2 under observation (last week 64 and 4 respectively); scarlet fever, 2116; diphtheria, 1775; enteric fever, 19; measles, 225; whooping-cough, 376; puerperal fever, 20 (plus 8 babies); encephalitis lethargica, 231; poliomyelitis, 6; "other diseases," 152. At St. Margaret's Hospital there were 21 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 12 (1) from measles, 4 (0) from scarlet fever, 13 (2) from whooping-cough, 25 (4) from diphtheria, 70 (17) from diarrhœa and enteritis under two years, and 41 (8) from influenza. The figures in parentheses are those for London itself.

Watford reported the death from enteric fever. Of the fatal cases of diphtheria, 6 occurred at Hull, 5 at Liverpool, and 3 at Halifax. Four deaths from measles were reported from Birmingham.

The number of stillbirths notified during the week was 233 (corresponding to a rate of 36 per 1000 total births), including 30 in London.

TYPHOID IN YORKSHIRE

The outbreak at Denby Dale being at an end, arrangements are in train for sending 60 convalescents to recruit in the South of England, and attention is concentrating on new sources of drinking water. A water diviner is searching for new springs and in the meantime the village main is being linked up with a reservoir supplying the neighbouring village of Cumberworth.

New cases are still being reported at Malton, the total up to Tuesday night being 230, with 11 deaths. For the past week or so the new infections must be regarded as secondary ones. A group of blood transfusion volunteers has been organised locally. Here as at Denby Dale a distress fund has been opened and has met with generous response.

Dr. L. C. Walker writes to correct certain dates in his account (p. 1085) of the Malton epidemic. The first case came into the poor-law institution on Sept. 23rd (not 21st), and was treated as a typhoid from the 26th.

PANEL AND CONTRACT PRACTICE

Teaching Insurance Practice Methods

AT this season of the year some medical schools arrange for lectures to final-year students on the intricacies of medical practice under the National Health Insurance Act. There may be, attached to teaching hospitals by virtue of some specialty which they practise, a number of insurance practitioners available for this task. But it is one definitely requiring very special qualifications. There are many points arising under the Act that are of the first importance if the practitioner of the future is to avoid the pitfalls which may bring him before the medical service subcommittee, with its associated worry and possible loss of prestige. Last week in this column we touched upon the methods of getting a name removed from one's list of insured persons, and the time when this can be done—matters which are known to few practitioners who are not dealing every day with them. Another conundrum which might be set to would-be lecturers on insurance practice is, who is to pay for the attendance of a nurse called in to give insulin daily to a diabetic patient whom the doctor attending considers incompetent to administer it to him/herself? Or—under what conditions is an insurance practitioner able to charge a bona-fide insured person without illegality, and what is the procedure to be adopted to avoid (quite properly) medical service subcommittee proceedings? If the deans of medical schools who have the interest of students at heart will consult with the secretaries of the local panel committees on this matter, these committees would generally be able and willing to nominate men with a working knowledge of the regulations, who will give chapter and verse for the difficulties which arise frequently in practice. Such lectures would be of material use to students in preventing mistakes in the carrying out of regulations under the Acts.

WHO SHOULD BEAR THE COST?

It will be remembered that this proposal was discussed at some length by the annual panel conference last month, when the discussion turned on the question of cost—it being agreed that there should be some remuneration for such lectures. The Insurance Acts Committee, through its chairman, proposed "that, with the object of preserving the high standard of the N.H.I. medical service, the conference approves the policy of the giving of lectures on uff Cooper replied: I presume the hon. Member to research work in connexion with chemical defence. nly institution is Oxford University. where certain ists carry out experiments for which payment is made Army funds.

MONDAY, NOV. 14TH

Certified Milk Regulations

tain McEwen asked the Minister of Health whether tention had been drawn to the difficulty which the cers of certified milk were faced with by reason of the try's regulation laying down that the date of production be stated on all bottles. so that the afternoon's milk nsaleable until the following day: and. seeing that ading of the regulation by post-dating was increasing, er he would take steps to stop this by amending the ation or otherwise.—Mr. Shakespeare (Parliamentary tary to the Ministry of Health) replied: My right friend is not aware that the practice of post-dating s of certified milk is increasing. and if any case in this is being done is brought to his notice. he will steps to secure compliance with the provisions of the ve Order. My right hon. friend has received some sentations suggesting that the requirement in question d be altered, and these will be considered in conjunction other proposals when an opportunity arises for the dment of the Order.

Maternal Mortality in Stepney

. Potter asked the Minister of Health whether. in of the mortality and morbidity in childbirth in the gh of Stepney, he would call for reports from the cal officers of health as to the advisability of establishing unicipal birth-control clinic in that borough.—Mr espeare replied: No. Sir. Local authorities have no al power to establish birth-control clinics as such. l send my hon. friend a copy of the circulars issued by lepartment on this subject.

TUESDAY, NOV 15TH

Medical Service in Bermuda

ptain Balfour asked the Financial Secretary to the Office the reasons which prevented the coöperation he civil medical staff on the island of Bermuda for g medical facilities to the 444 officers and other ranks which made necessary the services of three Royal Medical Corps officers for this purpose.—Mr. Duff er replied: The reasons may be summarised as follows: he distance between the residences of local civil doctors military stations. and lack of rapid means of conveyance; he fact that the local doctors are fully engaged in their ate practice; and (3) lack of accommodation in civil ital for military patients—necessitating maintenance military hospital. I would remind my hon. and gallant d that the Army medical staff are responsible for the ical care of the wives and families as well as of the ps themselves.

Silicosis

r. David Grenfell asked the Secretary for Mines if he ld give the number of cases of silicosis reported to him each of the British coal fields up to the latest convenient .—Mr. Ernest Brown replied: The following is the rmation asked for: Silicosis is not a notifiable disease the only figures are those of cases in which compensation paid under the Workmen's Compensation Act. The ber of such cases in coal-mines between Feb. 1st. 1929, date on which the Various Industries (Silicosis) Scheme e into operation, and the end of 1931, was 91, including fatal cases. Figures showing the number of cases in h coal-field are only available for 1931, and the distribu- of the 52 cases arising in that year was as follows:—

Area.	Fatal.	Disablement.
South Wales	5	13
Monmouth	5	21
Somerset	1	2
Staffordshire	1	1
Yorkshire	—	2
Lancashire	1	—
	13	39

Ir. David Grenfell asked the Secretary for Mines ether he had considered the compulsory adoption of ering or dust-catching appliances when shot holes were ed in stone by power-driven drilling machines.—Mr. nest Brown replied: The Coal Mines Act requires the of efficient means of preventing the escape of dust from er drills when they are used for drilling in ganister, d sandstone, or other highly siliceous rock. Active ures continue to be taken to ensure effective compliance with this requirement, to ascertain which dusts are injurious to health, and in what circumstances, and to secure the use of practical and effective means of suppressing them.

Mr. David Grenfell asked the Secretary for Mines whether he had received a report on the possible effect of stone-dusting on the health of men working underground: and whether he had had any record of silicosis or anthracosis cases from mines where boring by power-driven drills had not been introduced.—Mr. Ernest Brown replied: The stone-dusting of colliery roadways as an essential protection against coal-dust explosions has been generally enforced by regulation for nearly 12 years past. It has proved remarkably effective and I know of no evidence that the practice has been injurious to health. The suitability of the dust used is constantly watched by the inspectors of mines and steps are taken to prevent the use of unsuitable materials. In coal-mining the development of a case of death or disablement from silicosis is usually a matter of many years. It is very difficult, therefore, to relate the case fully and reliably to the working and medical histories of the worker, and at present the evidence in the very few cases which are not definitely associated with the use of power drills in siliceous rock is not conclusive. The condition of the lungs known as anthracosis is not specifically related to the use of power drills.

Maternity and Child Welfare

Mr. Parkinson asked the Minister of Health what grant would be made towards maternity and child welfare services during the current year: and the amount in the year 1931.—Mr. Shakespeare (Parliamentary Secretary to the Ministry of Health) replied: Under the Local Government Act. 1929. separate grants for maternity and child welfare services, other than the training of midwives and health visitors. ceased to be payable in respect of any year after the financial year 1929–30. The amount of the discontinued grant formerly paid by the Exchequer in respect of these services was included in determining the loss on account of grants under the Act.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Proby. Surg. Lts. M. G. Stratford and K. Forsythe to be Surg. Lts.

M. G. Ross to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS

Maj. P. M. J. Brett, Res. of Off., relinquishes his appt. under Art. 520 (*b*), Royal Warrant for Pay and Promotion.

The undermentioned to be Majs.: Capts. G. H. Barry, E. J. S. Bonnett. W. Y. Eccott. and C. A. Hutchinson.

R. T. Shipman to be Lt. (on prob.).

TERRITORIAL ARMY

Capt. C. W. F. Greenhill to be Maj.

INDIAN MEDICAL SERVICE

Capt. D. P. Bhargava to be Maj. (Prov.).

Lt. (on prob.) T. D. Ahmad to be Capt. (on prob.).

Lt.-Col. R. H. Bott retires.

Capts. M. S. Segat and C. L. Malhotra relinquish their temp. commns.

ROYAL AIR FORCE

Flying Officer E. K. Pritchard relinquishes his commission on completion of service.

ROYAL AIR FORCE RESERVE

Flight-Lt. R. F. T. Grace is transferred from Class D (ii to Class D (i).

DEATHS IN THE SERVICES

Surg. Capt. Edward Bridges Townsend, R.N., retd., who received his medical education at King's College, and qualified in 1883. died at the R.N. Hospital. Haslar, on Nov. 7th, aged 71. Entering the Royal Navy in 1884 he subsequently served in the battleship *Canopus*. in the Mediterranean. In 1903 he was promoted to fleet-surgeon for conspicuous merit. A year later he was appointed to the cadets training ship *Britannia*. and afterwards served in the Naval College at Dartmouth. A year before the outbreak of the war he became medical officer of the *Vernon*, torpedo school ship, where he served till 1917 when he retired.

National Institute of Industrial Psychology. The Rockefeller Foundation has made a further grant of £5000 towards the research funds of this institute, to be expended in the years 1933–36.

There would be a minimum scheme with discretion to the public assistance committees to go above the minimum if they deemed it desirable to do so according to the merits of the individual cases. Statutory protection would be given to a portion of disability pensions, which proposal conformed to the recommendations of the Royal Commission. The portion to be protected was one-half, but the discretion of the committees would not be interfered with in cases where they deemed it prudent to make larger allowances in cases where medical attention and special diet were involved. The insertion in the Bill of a specific figure of so much a week might do more harm than good, because the public assistance committees might be apt to regard it as a maximum and be disinclined to go beyond it. The question of savings was an extraordinarily difficult matter. What the Government proposed was to disregard savings which did not exceed £25, and where they did not exceed £300 they would be treated as equivalent to a weekly income of 1*s.* for every completed £25. So far as workmen's compensation was concerned, where there were lump sums taken by way of commuted workmen's compensation they were treated as "money or investments."

Mr. GREENWOOD said that the Government had no evidence whatever for their estimate that there would be a saving of £1,000,000. The Bill would not touch the great mass of injustices that have given rise to the growing volume of public indignation in regard to the administration of the needs test. The process was breaking up family life. The resolution did not touch the problem.

After further debate,

Sir E. HILTON YOUNG (Minister of Health) said that there was not a word of truth in the allegation that the inspectors of the Ministry of Health had bullied, badgered, and lectured public assistance committees to reduce the amounts payable to ex-Service men. The purpose of the second part of the resolution was to make it lawful in granting outdoor relief by way of public assistance to observe the same rules as were required by the resolution in relation to transitional payments. They were making in this Bill a change that was temporary, with the intention of its being succeeded by a more comprehensive scheme. In those circumstances it was thought that the changes in public assistance should be as small as possible. The judgment of those best qualified was that the additional charge on local authorities would be very small. He had undertaken to reconsider the basis of the block grant for local authorities in the distressed areas with a view to its revision in the second grant period, and that recommendation was well under way.

Mr. R. S. HUDSON (Parliamentary Secretary to the Ministry of Labour), replying to the suggestion that it might be possible to alter the resolution so as to disregard the whole of disability pensions below 8*s.* or 15*s.*, or some definite figure, said that the Ministry of Health would consider that point. (Cheers.) But it would be impossible to include such an alteration in the present Bill because it would increase the charge. Without in any way committing the Government, he would say that they would bear the point in mind, turn it over, and see when the final Bill, which they hoped to introduce next session, was under discussion, if they could do anything to meet the point. (Cheers.)

Dr. O'DONOVAN said that if the poor in Russia could starve for 15 years for the socialist millenium, he was certain that the English poor could put up with hardships for a couple of years in faith and hope for a better England. (Cheers.)

The resolution was carried by 267 votes to 43—majority, 224.

On the following day the resolution was agreed to on Report, and the Bill was brought in and read a first time.

The Royal Assent

In the House of Lords on Nov. 15th, the Royal Assent was given to the Edinburgh Royal Maternity and Simpson Memorial Hospital Order Confirmation Bill and the Ottawa Agreements Bill.

HOUSE OF COMMONS

THURSDAY, NOV. 10TH

Black-listed Schools

Sir WILLIAM JENKINS asked the Parliamentary Secretary to the Board of Education the number of black-listed schools demolished in 1930, 1931, and up to Sept. 30th, 1932, and the expenditure incurred upon rebuilding such schools, giving particulars for elementary and secondary separately, and the figures for England and Wales separately.—Mr. HERWALD RAMSBOTHAM replied: The following numbers of public elementary schools previously on the Board's "black list" have been closed or replaced:—

Year ending		England.	Wales.
Sept. 30th, 1930	.. ..	61	5
" " 1931	.. ..	42	5
" " 1932	.. ..	52	3

The Board have not compiled any "black list" of secondary schools.

As regards the second part of the question, I am afraid tha it is not possible to analyse the total expenditure incurred on new schools so as to show how much is directly referabl to the replacement of unsatisfactory buildings, as schoo which serve this purpose frequently serve at the same tim to meet other needs, such as increases in population or th improvement of educational facilities.

Sir WILLIAM JENKINS asked the Parliamentary Secreta to the Board of Education what was the number o elementary schools condemned through insanitary an other conditions and placed on the black list on Dec. 30th 1930, Dec. 30th, 1931, and the number on Sept. 30th 1932, or the latest available date; and the number o secondary schools for the same dates and give separat figures for England and Wales.—Mr. HERWALD RAMSBOTH replied: The total numbers of public elementary schoo included on the Board's "black list" were as follows:—

Year ending		England.	Wales.
Sept. 30th, 1930	.. ..	1531	184
" " 1931	.. ..	1381	169
" " 1932	.. ..	1264	158

No schools were added to the list during these years. Th Board have not compiled any "black list" of seconda schools.

Medical Herbalists and Registration

Mr. GORDON MACDONALD asked the Minister of Healt for what purpose he sent the letter he received from th National Association of Medical Herbalists of Great Britain Limited, on April 26th, 1932, to the General Medical Council —Sir E. HILTON YOUNG replied: A copy of the letter wa sent to the Registrar of the General Medical Council b my direction for the information of the Council, becaus the letter put forward a claim by the Committee of th National Association for registration as a teaching an practising body. No request was made or indication give that it was desired that the letter should be regarded a confidential.

The Post-graduate Medical School

Sir ERNEST GRAHAM-LITTLE asked the Minister of Healt whether, in view of the present need of retrenchmen exemplified by the cuts made and contemplated in eve department of public expenditure, and in view of the develo ment since the Athlone Committee reported of numerou agencies for supplying post-graduate teaching at th constituent medical schools of the London Universit it was proposed to proceed with the foundation of the post graduate medical school at Hammersmith; and, if so, wha was the amount of the contribution to be made by th Exchequer.—Sir E. HILTON YOUNG replied: The answe to the first part of the question is in the affirmative. A regards the second part, the maximum of the Excheque grant for the building and equipment of the school wi be £100,000.

Chemical Warfare

Mr. THOMAS WILLIAMS asked the Financial Secretary t the War Office the names of all universities or other edu tional institutions or private research establishments t which grants were given for chemical research work.

n Mary's House "

name has been given to a large house at Fleet, ire. which has been purchased as a home for retired s of Queen Alexandra's Imperial Military Nursing It is hoped that the necessary alterations will be ed in time to allow of the house being occupied pring of next year.

adcast Demonstration

)ec. 2nd Dr. Leo Jacobsohn will give a wireless on cardiac auscultation. In connexion therewith l heart-sounds will be broadcast via the German Königswusterhausen. Medical listeners are asked rt to the Kaiserin Friedrich-Haus, Robert Koch-, Berlin NW 7, on the results of the reception.

ı Health Resorts Association

naugural luncheon of the British Health Resorts tion, Ltd., will be held at the Ritz Hotel, Piccadilly, , W., at 1 for 1.15 P.M. on Tuesday, Nov. 22nd. eston, chairman of the association, will preside, and ıcipal speakers will be Sir Hilton Young, Minister of , Sir Thomas Horder, Lieut.-Colonel R. H. Elliot, ., and Dr. Fortescue Fox. Tickets may be had from secretary of the association, 28, Portland-place, W.1.

y of Apothecaries of London

ecil Wall, the new Master, presiding over a Livery on Tuesday last, Nov. 15th, said that within three the society would celebrate the 300th anniversary irst meeting in the present hall. The general prac- of to-day was the direct lineal descendant of the ary of the seventeenth century. It was a curious of the Act of 1815 that it selected a city company rol the development of general practice, but universal had been accorded to the society's work, and it ced the medical schools of the country into activity. difying its requirements from candidates the society iven a coach-and-four through the apprenticeship , and in 1834 it was able to demand that every should spend three years in a medical school, ng 18 months in hospital. Sir George Makins, ıg as senior liveryman, mentioned that it was rs since he was apprenticed to a member of the , taking his preliminary examination not long after- The society, he said, had always done its best to e medicine, not only by improving education but also h scholarships for research. Sir William Willcox, warden, in proposing the toast of the Medical Schools, at everything was in the melting-pot—economically What was the future of the voluntary future of the medical curriculum? The it should have a voice in the deliberations ed the curriculum, but he was sure that ans of the medical schools should play an important deciding that future. Dr. C. M. Wilson, dean of ry's Hospital medical school, in reply, said that in rds of Dr. Johnson, "there are some subjects from the mind naturally retires"—and one of them was edical curriculum. It had been debated since the f the Greeks, and he feared the solution of the problem not come to the present company at a time when all the blood in their bodies was in the splanchnic . All had their views and remedies. It should be in mind, however, in criticising examinations, that if ere abolished the process of signing-up would have made so strict that it might become a persecution. Vakelin Barratt, senior warden, in proposing the of the Visitors, spoke of the society's continuing pecial interest in materia medica, midwifery, and es of children. Colonel Norman King, registrar of eneral Medical Council, who replied for the guests, hat the Act of 1858 was an advance, because it made ractitioner qualify in all three branches of medical and he could not help thinking that any step which d a partial qualification would be retrograde. The il had no power to lay down rules concerning the al curriculum; its function was to inquire, to suggest, report, and he believed that the way in which it cir- d information about what was being done by the various ng bodies was of great value to many of them. It red to him as a layman that the thing to be sought ot to turn out a specialist but a general practitioner. so doing the curriculum could be lightened it would good thing, and if it were possible to include six ths' apprenticeship to a general practitioner, he thought ould be a great advantage.

mong those present at the dinner were the deans of nedical schools of Guy's Hospital (Prof. T. B. Johnston), tminster (Sir Stanley Woodwark), St. Thomas's (Prof. . Dudgeon), Middlesex (Dr. Izod Bennett), the London . William Wright), and Charing Cross (Mr. Eric Crook).

Royal Society of Medicine

Section of Laryngology.—The first award of the Logan Turner prize will be made in June, 1934. The subject is: To investigate the part played by allergy or sensitisation as a factor in predisposing the mucous membrane of the nasal fossæ and of the paranasal air sinuses to infection, and its bearing upon the treatment of disease of these cavities. Papers should be sent in to the hon. secretary of the Section at 1, Wimpole-street, London, W.

Bacteriological Standards for Milk and Ice-cream

A joint meeting of the metropolitan branch of the Society of Medical Officers of Health and the food group of the Society of Chemical Industry will be held at 5.30 P.M. on Friday, Nov. 25th, at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C. Prof. W. W. Jameson will take the chair, and a discussion on Bacteriological Standards for Milk and Ice-cream will be opened by Dr. Vynne Borland, medical officer of health for Bethnal Green, Prof. G. S. Wilson, of the London School of Hygiene, Mr. E. B. Anderson, of United Dairies, Ltd., and Mr. D. H. Clayson, of J. Lyons and Co., Ltd.

Nurses' Home at Limerick

A wing in reinforced concrete has been added to Limerick county infirmary as a nurses' home. The cost has been defrayed by a grant from the hospital sweepstake funds. Limerick firms have made the whole of the furniture. Every room has a fireplace as well as central heating. The floor vacated by the nurses is to be made into a ward of 20 or more beds, and the Hospitals Trust is being asked to grant more money to enable the institution to be extensively improved.

North Staffordshire Orthopædic Hospital

The Duchess of Portland last week opened a new open-air pavilion of this hospital at Hartshill, Stoke-on-Trent. There are two wards, one each for boys and girls (50 patients), which have cost £7000. The walls are adorned with representations of children's fairy tales and rhymes. The warming is by ceiling radiators. The annual report records that 209 new cases were admitted and 864 out-patients treated—a record number. The average weekly cost per in-patient was £2 14*s.* 2½*d.*—a small increase. The old out-patient block has been adapted as workshops for the making of splints and other appliances.

British Empire Cancer Campaign

Sir John Bland-Sutton presided at the quarterly meeting of the Grand Council of this campaign held in London on Nov. 14th. The following grants, totalling £14,100, were made in furtherance of cancer research: £5400 to the Middlesex Hospital; £2700 to the Cancer Hospital (Free); £2250 to St. Bartholomew's Hospital; £1150 to the Mount Vernon Hospital; £690 to the Marie Curie Hospital; £585 to St. Mark's Hospital; £550 to Mr. I. Hieger, working at the Cancer Hospital; £400 to the Westminster Hospital; £350 to the Medical Research Council, towards the maintenance of the radon centre at the Middlesex Hospital; and £25 to Dr. E. K. Dawson, at Edinburgh.

Mr. Cecil Rowntree is to be the representative of the University of Sydney cancer research committee on the Council, in place of Sir Granville Ryrie.

Hospital Extensions

During the last week or two extensions and improvements to several provincial hospitals have been opened. The most important of them is the Walton Hospital of the corporation of Liverpool (2021 beds), where a new theatre was opened last week by the Lord Mayor, Mr. A. Gates, who stated that the hospital is the largest in the country. The theatre is named after Miss Agnes Jones, who laid the foundation of poor-law nursing in the predecessor of the present institution in 1865. The work she did there is commemorated by a statue in the hospital chapel and by a window in Liverpool Cathedral, in which the centenary of her birth was marked by a service on Sunday last. The hospital deals with 16,000 patients a year, and there are annually between 2000 and 3000 major operations.—Also last week a new male wing of Southport Convalescent Hospital was opened by Princess Blücher.—Sir Hubert Bond has opened an enlargement of Berkeley Hospital, Gloucestershire, which includes one public and two paying wards, a theatre, and accommodation for nurses. The cost has exceeded £2200.—Miss L. R. Gilchrist recently formally opened a new out-patient's department at Tynemouth Victoria Jubilee Infirmary. The building has cost £16,500, the proceeds of a legacy from the late Mrs. Wilson of Easby House, North Shields, and is a memorial to her mother, brother, brother-in-law, and sister-in-law. The building includes two large massage rooms, a theatre, a laboratory, and the usual accessories. The warming is by the panel system.

MEDICAL NEWS

University of Oxford

The following have been appointed or reappointed examiners:—

Anatomy: Prof. J. E. S. Frazer. *Physiology*: Dr. C. G. Douglas, F.R.S. *Materia medica*: Dr. K. J. Franklin. *Pathology*: Dr. E. W. Ainley Walker. *Forensic medicine and public health*: Dr. J. F. Taylor. *Medicine*: Dr. C. M. Hinds Howell. *Surgery*: Prof. G. E. Gask. *Midwifery*: Mr. A. J. McNair and Mr. Wilfred Shaw.

Pembroke College.—The Theodore Williams medical scholarship, of £100 a year for four or five years, will be awarded next spring. An examination will be held on Feb. 21st, and particulars may be had from the senior tutor of the college.

University of Cambridge

Sir Charles Sherrington, O.M., Waynflete professor of physiology in the University of Oxford, has been appointed Bede lecturer for 1933.

University of London

Five lectures on Bacteria in Nature will be given by Dr. F. W. Twort, F.R.S., professor of bacteriology in the University, at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C., at 5 P.M. on Dec. 1st, 2nd, 5th, 6th, and 7th.

Two lectures on Sinanthropus will be given at University College, Gower-street, London, W.C., at 5.30 P.M., on Friday, Dec. 9th, and Monday, the 12th, by Dr. Davidson Black, professor of anatomy in the Peiping Union Medical College, China.

Royal College of Surgeons of England

An ordinary meeting of the council was held on Nov. 10th, with Sir Holburt Waring, the president, in the chair.

Diplomas of membership were granted to the candidates whose names appeared in our issue of Nov. 5th (p. 1031) as recipients of the L.R.C.P. (with the exception of H. F. Moseley).

Diplomas in public health were granted, jointly with the Royal College of Physicians, to candidates whose names appeared on the same page. A diploma in gynæcology and obstetrics was granted, jointly with the College of Physicians, to Dr. Albert Leslie Watson, of the University of Sydney.

Mr. Gerard Sutherland Irvine, late of Epsom College, was nominated the fortieth Jenks scholar. Sir Cuthbert Wallace was elected a member of the committee of management of the Conjoint Examining Board, in the place of Mr. F. J. Steward.

Psycho-analysis in Medicine

At a meeting of the Paddington Medical Society on Nov. 8th, Dr. Ernest Jones spoke on the Significance of Psycho-analysis in Modern Medicine. It enlarged the field of medicine, he said, in two ways. It, for the first time, gave physicians the ability to understand and cope with many conditions in whose presence they had previously been helpless, and it had extended the field of therapeutics to other conditions, such as marital incompatibility, which had previously not belonged to it. He discussed three ways in which physical disease produced a mental situation which tended to evoke any neurotic elements present, through (1) frustration, (2) fear, and (3) suffering. The stress laid by psycho-analysis on the dynamic factors in disease was in accord, he said, with the functional attitude in modern medicine, just as the stress it laid on the instinctual origin of mental conflict was in accord with biological principles.

Fellowship of Medicine and Post-Graduate Medical Association

There will be an afternoon course in infants' diseases at the Infants Hospital, Vincent-square, S.W., from Nov. 28th to Dec. 10th. A course in dermatology will be given at the Blackfriars Skin Hospital from Nov. 28th to Dec. 10th. The course will consist of instruction in the out-patient department every afternoon from 2.30 P.M. Special demonstrations of interesting cases will be given on Tuesday, Nov. 29th and Tuesday, Dec. 6th. Two demonstrations of medical ophthalmology will be given at the Royal Westminster Ophthalmic Hospital, Broad-street, W.C., as follows: Wednesday, Dec. 7th, at 5 P.M., Mr. G. G. Penman, demonstration of fundi of medical interest; Thursday, Dec. 8th, at 8.30 P.M., Mr. C. L. Gimblett, Some Points in Medical Ophthalmology (illustrated by epidiascope). A panel of teachers is available daily for personal tuition in almost all branches of medicine and surgery; arrangement for attendance at these clinics must be made through the Secretary of the Fellowship, at 1, Wimpole-street, London, W., from whom all particulars may be had.

Addenbrooke's Hospital, Cambridge

Sir Humphry Rolleston will open the new Douty clinic at this hospital, at 3 P.M. on Friday, Nov. 25th

Royal Institute of Public Health

The next annual congress of this institute will be at Eastbourne from May 30th to June 4th, 1933. Leverhulme will preside.

Lister Institute of Preventive Medicine

Applications are invited for a research fe bacteriology of £500 per annum, tenable at this Particulars will be found in our advertisement co

North-West London Medical Society

This society will hold a dinner and dance at House, Park-lane, W., at 8 P.M. on Thursday, Dec. Particulars may be had from Dr. J. O. Musson, 10, road, N.W.2.

British Serbian Units

The eleventh annual reunion dinner of the British Units Branch of the British Legion, and of all Serbia, will be held at the Lysbeth Hall, London, W., on Saturday, Dec. 3rd, at 7 for 7 Tickets from Miss Marx, 24, Melcombe-court, square, N.W.1.

Shoreditch Public Health Service

The mayor of Shoreditch has opened new public offices which provide accommodation for the whole department, including a dental hospital, breast and light clinics. The cost has been £11,000. there were 42,000 visits to the welfare clinics.

Royal Faculty of Physicians and Glasgow

The following office-bearers have been elected ensuing year:—*President*: Mr. R. Barclay Ness; Prof. J. M. Munro Kerr; hon. treasurer: Mr. MacDonald; hon. librarian: Dr. E. R. L. *councillors (in addition to the above)*: Mr. G. H. representative on the General Medical Council (ex Dr. John F. Fergus, Dr. John Henderson, Dr. A Kelly, Dr. J. Souttar M'Kendrick, Mr. W. F Mackenzie, Mr. John Patrick, Mr. William J. Mr. John Rowan, Prof. Archibald Young, and Young.

Imperial Cancer Research Fund: Annual

The thirtieth annual report records the app Sir Percy Sargent as joint treasurer with Sir George The fund has received a donation of £20,000 to "Miss Elizabeth Wills Allen Memorial Fellowship A. F. Watson, of Sheffield, has been appointed a of the scientific staff as from Sept. 1st, and it h decided to make a grant of £250 per annum to Dr. Todd, of Bristol, towards his laboratory expense report of the director, Dr. J. A. Murray, F.R.S., the researches published in the tenth scientific which has already been reviewed in our colum publications from the laboratory during the issued in this report, include two papers by Prof. R. of New York, and Mr. R. J. Ludford, D.Sc., rec liminary observations on the micro-dissection and injection of normal and cancer cells grown in vitro observations demonstrate the close physico-chem larity of cancer cells to their normal prototypes. Cramer's survey on the Comparative Study of published in the *Cancer Review*, 1932, vii., 241, is as providing a valuable reminder of the pr since the fund was inaugurated 30 years ago, and confirmation of the views advanced at that time importance of the occurrence of cancer in wild and ticated animals for the statement and study of the problem. Dr. H. G. Crabtree has contributed to report a critical essay on the metabolism of the cell, dealing mainly with the results of the which have arisen out of the new lines of inquiry by the work of Warburg.

The executive committee have reluctantly Frederic Hallett's resignation of the post of secre account of his continued ill-health. They appreciation of the way he has guided the policy fund during its 30 years of existence, and believe success and reputation of the fund must be largely to his devotion. In recognition of his invaluable have granted him a pension, and, with the consent president, the Duke of Bedford, Sir Frederic has been a vice-president of the fund.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Nov. 22nd.—5 P.M., Medicine. Discussion: The Pathogeny of Nephritis and its Bearing on Treatment. Opener: Prof. O. L. V. de Wesselow. Followed by Dr. J. C. Spence and Dr. T. Izod Bennett.

Wednesday.—5 P.M., Comparative Medicine. Discussion: Heredity as a Factor in Animal Disease. Openers: Prof. F. A. E. Crew and Mr. W. C. Miller.

Thursday.—7.45 P.M., Neurology. Clinical meeting at the out-patient department of the West End Hospital for Nervous Diseases, 73, Welbeck-street, W. 8.30 P.M., Urology. Clinico-pathological meeting. Cases and specimens: Mr. A. E. Roche: 1. Congenital Solitary Kidney. Mr. S. MacDonald: 2. Myoma of Bladder. 3. Ureteric Calculus showing Spontaneous Fracture. 4. Tuberculous Kidney. Mr. J. G. Yates Bell: 5. Total Cystectomy for Papilloma. Mr. H. W. S. Wright: 6. Hypernephroma with no Local Symptoms, with a short description of [illegible] mino-thoracic Exposure of the Kidney. 7. Carcinoma of the Urethra. Mr. E. W. Riches: 8. Prostatic Ducts shown in a Cystogram. 9. Cystogram of Multiple Calculi in a Vesical Diverticulum. Mr. H. P. Winsbury-White: 10 and 11. Dilatation in the Urinary Tract in Children. 12. New Growth of Kidney. Other cases and specimens will be shown.

Friday.—5 P.M., Disease in Children. (Cases at 4.30 P.M.) 8 P.M., Epidemiology and State Medicine. Paper: Dr. E. W. Caryl Thomas (M.O.H., Dagenham, Essex): Problems in Public Health Encountered in a New Area.

MEDICO-LEGAL SOCIETY.

Thursday, Nov. 24th.—8.30 P.M. (at 11, Chandos-street, W.), Dr. F. J. McCann: The Medico-legal Significance of Impotence in the Male and in the Female. (Discussion will follow.)

HUNTERIAN SOCIETY.

Monday, Nov. 21st.—9 P.M. (at the Apothecaries Hall, Water-lane, E.C.), *Discussion on the Influence of Faith on Disease*, to be opened by the Rev. Father Woodlock, Dr. Robert Hutchison, and Dr. William Brown.

NORTH-WEST LONDON MEDICAL SOCIETY.

Tuesday, Nov. 22nd.—9 P.M. (at Willesden Constitutional Club House), Dr. James Mennell: Joint Manipulations in General Practice.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, W.

Friday, Nov. 25th.—8.30 P.M. Papers by Major F. C. Doble, Mr. T. J. Wright, and Mrs. Lynette Hemmant on *Difficult Cases—What Should A. Do?* (Discussion will follow.)

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.

Friday, Nov. 25th.—5 P.M. (at 11, Chandos-street, Cavendish-square, W.), Discussion on Mouth-breathing and Nasal Obstruction to be opened by Mr. Warwick James and Mr. Somerville Hastings.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

Tuesday, Nov. 22nd.—3 P.M. (in the Barnes Hall of the Royal Society of Medicine), Sir Farquhar Buzzard: Education in Medicine. (Maudsley lecture.)

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

Wednesday, Nov. 23rd.—5 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Dr. J. M. H. MacLeod: Observations on Leprosy in Great Britain at the Present Time.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

Tuesday, Nov. 22nd.—5 P.M., Prof. L. P. Jacks: *The Liberal Education of the Body. (Lloyd Roberts lecture.)*

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

Monday, Nov. 21st, to Saturday, Nov. 26th.—West End Hospital for Nervous Diseases, 73, Welbeck-street, W. A Course in Neurology daily at 5 P.M.—Royal Waterloo Hospital, Waterloo-road, S.E. A Course in Medicine, Surgery, and Gynæcology. Afternoons and some mornings.—Hospital for Consumption, Brompton, S.W. A Course in Practical Pathology dealing with Laboratory Methods and the Interpretation of Results. Thurs., at 11.45 A.M.—London Lock Hospital, 91, Dean-street, W. Course in Venereal Diseases, afternoons and evenings.—St. Mark's Hospital, City-road E.C. Course in [illegible] All day.—British Red Cross Clinic for [illegible] c, Marylebone-road, N.W. Six [illegible] on Diagnosis and Treatment of [illegible] Tues. and Thurs., at 8.30 P.M.—[illegible] for Nervous Diseases. In-patient Department, Gloucester-gate, N.W. Demonstration on the Fundus Oculi by Mr. R. Lindsay Rea, on Tues., 8.30 P.M. (Specially suitable for M.R.C.P. candidates.)—These courses and demonstrations are open only to Members of the Fellowship of Medicine.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL POST-GRADUATE SCHOOL.

Wednesday, Nov. 23rd.—4 P.M., Mr. D. H. Patey: Modern Views on the Formation of Gall-stones.

WEST LONDON HOSPITAL POST-GRADUATE CO Hammersmith, W.

Monday, Nov. 21st.—10 A.M., Genito-urinary O Skin Department. 11 A.M., Surgical Wards Eye and Gynæcological Out-patients.

Tuesday.—10 A.M., Medical Wards. 11.15 A.M., Demonstration. 2 P.M., Throat, Nose, and patients.

Wednesday.—10 A.M., Medical Wards, Children's Out-patients. 2 P.M. Eye Department. 4 Venereal Diseases Demonstration.

Thursday.—10 A.M., Neurological Out-patients 11 Demonstration of Fractures. 2 P.M., Eye and urinary Out-patients.

Friday.—10 A.M., Skin Out-patients. 2 P.M., Nose, and Ear Out-patients.

Saturday.—10 A.M., Medical and Surgical Children's Medical Out-patients.

Daily.—At 2 P.M., Operations, Medical and Out-patients. The lectures at 4.15 P.M. are open Medical Practitioners without fee.

NATIONAL HOSPITAL, Queen-square, W.C.

Monday, Nov. 21st.—2 P.M., Dr. Riddoch: Out-Clinic. 3.30 P.M., Dr. Symonds: The Sensory

Tuesday.—2 P.M., Dr. Walshe: Out-patient 3.30 P.M., Dr. Martin: Intracranial Pressure, &c.

Wednesday.—2 P.M., Dr. Martin: Out-patient 3.30 P.M., Dr. Collier: Clinical Demonstration

Thursday.—2 P.M., Dr. Kinnier Wilson: Out Clinic. 3.30 P.M., Dr. Collier: Confusion, Dementia.

Friday.—2 P.M., Dr. Adie: Out-patient Clinic. 3 Dr. Symonds: The Sensory System.

CENTRAL LONDON THROAT, NOSE, AND EAR PITAL, Gray's Inn-road, W.C.

Friday, Nov. 25th.—4 P.M., Mr. Harold Kisch: In for the Performance of Different Types of Operations.

ST. PETER'S HOSPITAL FOR STONE, POST-GRAD COURSE, Henrietta-street, Covent Garden, W.C.

Wednesday, Nov. 23rd.—3 P.M. Mr. A. C M Relationship of Certain Genito-urinary Symp Arterial Disease.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

Wednesday, Nov. 23rd.—4.30 P.M., Mr. Stanford Cancer of the Penis.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Vale, W.

Thursday, Nov. 24th.—3 P.M., Dr. W. G. Wyllie genital Syphilis Demonstration.

LONDON JEWISH HOSPITAL, Stepney Green, E.

Thursday, Nov. 24th.—4 P.M., Dr. David Krestin: demonstration.

LONDON SCHOOL OF DERMATOLOGY, St. John's H 49, Leicester-square, W.C.

Tuesday, Nov. 22nd.—5 P.M., Dr. H. W. Barbe munity and Anaphylaxis.

Thursday.—5 P.M., Dr. W. N. Goldsmith: Pigme of the Skin.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL mark-hill, S.E.

Thursday, Nov. 24th.—9 P.M., Dr. C. F. T. East culties in Diagnosis and Treatment of Cardiac D

SOUTH-WEST LONDON POST-GRADUATE ASSOCI St. James's Hospital, Ouseley-road, Balham, S.W.

Wednesday, Nov. 23rd.—4 P.M., Dr. C. E. Lakin: stration of Medical Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen W.C.

Wednesday, Nov. 23rd.—4 P.M., Miss M. Forrester-Prevention of Crippling in Childhood and Youth

Thursday.—4 P.M., Dr. Letitia Fairfield: Medi Aspect of Mental Deficiency.

CHADWICK LECTURES.

Friday, Nov. 25th.—7.30 P.M. (in the Town Hall, Ga Dame Louise McIlroy: Maternal and Infant

MANCHESTER ROYAL INFIRMARY.

Tuesday, Nov. 22nd.—4.15 P.M., Mr. C. Roberts Pre-operative Care of Patients.

Friday.—4.15 P.M., Mr. A. H. Southam: Demon of Surgical Cases.

ANCOATS HOSPITAL, Manchester.

Thursday, Nov. 24th.—4.15 P.M., Mr. F. H. A Talk on Laryngeal and other Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIAT

Tuesday, Nov. 22nd.—3.30 P.M. (in the Facult Vincent-street), Dr. R. R. Morrison: Radium.

Wednesday.—4.15 P.M. (in the Royal Maternity H Prof. J. Munro Kerr: Obstetrical Cases.

Appointments

Tippett, G., M.B., M.S. Lond., has been appointed Assistant and Registrar to the Harlow Wood H Nottingham.

Certifying Surgeons under the Factory and Worksh Ashton, J. C. (Machynlleth, Montgomery); Joir (Guiseley, York).

room windows are ingeniously designed to give the maximum light and the minimum degree of shadow. One model shows a long sheet of glass, 12 feet in height, with a further domed section springing 7 feet to the roof. All the frames are of steel, and the joints are welded solid. The opening casements are airtight when closed; they are easily opened and allow a large volume of air to enter when required. Of other exhibits one of the most interesting illustrated the value of occupational therapy in the care of mental defectives.

ANOTHER GRENFELL CALENDAR

An attractive calendar for 1933 will be sold for the benefit of Sir Wilfred Grenfell's work in Labrador and Northern Newfoundland. The calendar consists of a frontispiece in colours entitled "Down North on the Labrador," and each of the twelve pages contains new photographs of the Labrador, a calendar for the month, and quotations from Grenfell's writings. The calendar is produced for the Grenfell Association by Raphael Tuck and Sons, Ltd., and the price is 3*s.* 6*d.*

"Special Reserve" Cyder.—We have received from Messrs. Wm. Gaymer and Son, Ltd. (Attleborough, Norfolk). samples of "Special Reserve" Cyder, the medical importance of which is that it contains only the barest trace of sugar, and it is therefore a suitable beverage for a diabetic patient. The dryness, however, for those whose consumption is not limited by health needs, can be modified to taste, the suggestion of the manufacturers being that it will be found a very satisfactory drink if a quarter of a grain of saccharin is added to a half-bottle of the cyder. The alcoholic content is not heavy, approximately 7·0 per cent.

A Dental Diary of Appointments.—The Dental Manufacturing Co., Ltd. (Brock House, Great Portland-street, London, W.1), has sent us a copy of an Appointment Book for 1933, which is excellently suited for its purpose. We are noticing it now because it must be a convenience to every methodical dental practitioner to be able to enter his New Year appointments from the early autumn onwards. The diary contains three columns to a page and a week in an opening, with space for half-hourly appointments from 9 A.M. to 8 P.M. At the beginning are useful notes on fees and regulations for dental benefit, and at the end is an address-book. The price is 6*s.* 6*d.* plain, 7*s.* 6*d.* interleaved with blotting-paper, 8*s.* interleaved with ruled paper (as in the copy we have received); postage 6*d.* extra.

Vacancies

For further information refer to the advertisement columns

Altrincham General Hospital.—Sen. and Jun. H.S.'s. At rate of £150 and £120 respectively.

Birmingham and Midland Eye Hospital.—Res. Surg. O. £150.

Bolton Royal Infirmary.—Two H.S.'s. Each £125.

Bristol Royal Hospital for Sick Children, St. Michael's-hill.—Medical Registrar.

Buxton, Devonshire Hospital.—Asst. H.P. £150.

Cancer Hospital, Fulham-road, S.W.—Asst. Radiologist. £350. Also H.S. At rate of £100.

Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.

Carl [illegible] *Infirmary.*—Hon. Phys.

Cent [illegible] *Hospital, Judd-street, W.C.*—

Cent [illegible] *nd Ear Hospital, Gray's Inn-road, W.C.*—Hon. Asst. to Out-patients.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Dreadnought Hospital, Greenwich.—Med. Supt. £250. Also H.P. and H.S. Each at rate of £110.

East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200.

General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.

Golden-square Throat, Nose and Ear Hospital, W.—H.S. £100.

Great Yarmouth General Hospital.—Two H.S.'s. Each £140.

Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—[illegible]etist. £25.

Harrogate and District General Hospital.—Second Res. £150.

Hospital for Sick Children, Great Ormond-street, W.C.—Par Jun. Cas. O. At rate of £150. Also H.P. and H.S. at rate of £100.

Ipswich, East Suffolk and Ipswich Hospital.—H.P. and H.S.'s. Each at rate of £120.

Jersey General Hospital and Poor-law Infirmary.—Res. £200.

Leamington Spa, Warneford General Hospital.—Hon. for Diseases of Ear, Nose and Throat.

Lister Institute of Preventive Medicine, Chelsea Bridge-road. Institute Research Fellowship in Bacteriology.

Liverpool, Alder Hey Children's Hospital.—Res. Asst. £200.

London Homœopathic Hospital, Great Ormond-street, Res. M.O. £100.

Lowestoft, St. Luke's Hospital.—Res. Asst. M.O. £350.

Lucknow University.—Prof. of Surgery. Rs. 900/- pm.

Maidenhead Hospital.—Res. M.O. At rate of £150.

Manchester, Ancoats Hospital.—Surg. Reg. Also H.P rate of £100.

Maudsley Hospital, Denmark-hill, S.E.—Asst. M.O. At £300.

Middlesex County Council.—District M.O. and Public V for Hendon Central. £80. Also District M.O. and Vaccinator to Lower Tottenham. £150.

Miller General Hospital, Greenwich-road, S.E.—Out Officer. At rate of £150. Also H.P. and Two Each at rate of £100.

Newcastle-upon-Tyne Eye Hospital.—Res. H.S. £150.

Newport, Isle of Wight, County Mental Hospital.—A £350.

Northern Rhodesia.—Chief M.O. for Mining Company.

Oldham, Boundary Park Municipal Hospital.—Res. £200.

Oxford, Pembroke College.—Theodore Williams Medical ship. £100.

Penshurst, Kent, Hospital for Functional Nervous Swaylands.—Asst. Physician. £750.

Plymouth Central Hospital.—H.S. At rate of £150.

Poplar Hospital for Accidents, East India Dock-road, Res. O. £200.

Queen Charlotte's Maternity Hospital, Marylebone-road, Two Res. Anæsthetists. Each at rate of £100 Asst. Res. M.O. At rate of £80.

Queen Mary's Hospital for the East End, E.—Res. M Cas. O. At rate of £200 and £150 respectively H.P. and H.S.'s. Each at rate of £120.

Queen's Hospital for Children, Hackney-road, E.—H Cas. O. Each at rate of £100.

Reading, Royal Berkshire Hospital.—H.S. £150.

Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. of £150. *Dist. Obstet. Asst. At rate of* £100. H.P.'s, H.S.'s, and Res. Anæsthetist, &c.

Royal Waterloo Hospital for Children and Women, Water S.E.—H.S. At rate of £100.

St. Thomas's Hospital, S.E.—Surgeon.

Sheffield, Jessop Hospital for Women.—H.S. to Maternit At rate of £120.

South-Eastern Hospital for Children, Sydenham, S.E.—J M.O. At rate of £120.

South London Hospital for Women, Clapham Common, Clin. Assts. Also H.S. At rate of £100.

South Shields, Ingham Infirmary.—Jun. H.S. £150.

Southern Rhodesia, Public Health Laboratory, Sali Technical Asst. £375.

Swansea General and Eye Hospital.—Hon. Asst. Sur Ear, Nose and Throat Dept.

University College Hospital, Gower-street, W.C.—Asst. Ph to Skin Dept.

Warwick, King Edward VII. Memorial Sanatorium, Hertf Jun. M.O. At rate of £200.

West London Hospital, Hammersmith-road, W.—H.P. an H.S.'s. Each at rate of £100. Hon. Med. Re Gynæcologist.

Wigan, Royal Albert Edward Infirmary and Dispensary. Med. and Surg. O. and Reg. £250.

Willesden General Hospital, N.W.—Clin. Assts. to Out-p Dept.

The Chief Inspector of Factories announces vacant appoi for Certifying Factory Surgeons at Llanidloes (Mont and Henley (Oxford).

Births, Marriages, and Deat

DEATHS

Gardner-Medwin.—On N [illegible] no in London, Frank [illegible] L.R.C.P., of "Angorf [illegible]

Henry.—On Nov. 10th, [illegible] S Albert Ernest (Tom [illegible] S. Talbot-place, Staffor [illegible]

Langridge.—On Nov. 10th, at Ilfracombe, Frank Was Langridge, M.R.C.S., L.R.C.P.

Mackinnon.—On Nov. 13th, suddenly, from heart Colin Campbell Mackinnon, M.R.C.S., L.R.C.P.

Mills.—On Nov. 8th, in Leeds, Thomas Ingham Mills, M L.R.C.P., Capt. R.A.M.C. (T.F.), retired, of East road, York, aged 67.

[illegible] 30th, at Balwyn, near Mel [illegible] erly of Camperdown, August [illegible] M.R.C.S., L.R.C.P., aged 79.

N.B.—A fee of [illegible] *is charged for the insertion of N Births, Marriages, and Deaths.*